SEQUENCE LISTING

<110> Zyskind, Judith
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Froelich, Jamie M.
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Xu, H. Howard

<120> GENES IDENTIFIED AS REQUIRED FOR PROLIFERATION IN ESCHERICHIA COLI

<130> ELITRA.001DV1

<150> 09/492,709

<151> 2000-01-27

<150> 60/117,405

<151> 1999-01-27

<160> 485

<170> FastSEQ for Windows Version 3.0

<210> 1
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<213> E. Coli

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atcaccagca gatgaaataa cgataaccag aacaacgcct tatagcgttg agtttgcgag 120
aaaacgttca tattgtacct ttttgattaa ccattgggg 159

<210> 2
<211> 696
<212> DNA
<213> E. Coli

<220>
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<222> (1)...(696)
<223> n = A,T,C or G

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aaagagctga cgattcaacc gggatgcagt tccggccagg cgtgtgaaaa cgcgctgccg 120
gtcacctact caaacgtgga accgagcgat ttcgttcaga ccttctcacg ccgtaatggt 180
ggggaagcga ccagcggatt ctttgaagtg ccgaaaaacg aaaccaaaga aaatggaatt 240
cgtctttccg agcgtaaaga gacactgggt gatgtgacgc accgcattct gacagtgccg 300
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attgttcctc cgggacaata cttcatgatg ggcgacaacc gcgacaacag cgcggacagc 420
cgttactggg gctttgtgcc ngaagcgaat ctggtcggtc nggcaacggc tatctggatg 480
aacttcgata accaagaagg cgaatggccg aatggtctgc cctaantcgc attggcgnnt 540
ccnttaatan ccacttcctt cnctttgtcc ccttatggca acacttaatt tattntaaan 600
taatcncccg tggctnacaa atccccgcct tttnttaaaa atttccccna anttaaggtt 660
ggcctccagt tgcccgnccc aaacactttg gncccc 696

<210> 3
<211> 681
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(681)
<223> n = A,T,C or G

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ccagtcggca gcgacaactt gcgttaaagt cgcaaaatta tcatctgcac tcactgcgtg 120
acgtaagcgg atggagtggc cggaaacctc atagtgaccg cccaccagtt ggcctgcatc 180
gctttgtagc gtacgcgcgg cattggcaat aagattcaga tactcagact cttccggggc 240
cttcgccagc ataaaagagg aggatgctcg cgtatgcagc aactgctcca gcgcaaattg 300
cagccgcggt tgagtatcac tgaataaagg atcgttttcg tcaatcaaat gtggctgagc 360
aaatatttcc tgatagctat cggtatcagg aaccaggtca cgccatgcaa gtttcgtaat 420
ggtcaaagtt gatgtttttt agtctgttgt caaagccgcn attataccng taaccggcac 480
tacagcacac gtagaaagca cccgacaata ctcctggcat gggcgttaaa gctcacagga 540
tggagatctt ttcttcactg gcctaaaaag ctgatattct gtaaagagtt acacngtaac 600
attgagatcg ctatgaaata tcaacaactt ggaaaatctt gnaaagcngg ttggaaaatg 660
gaaagtatct ggttaagaag c 681

<210> 4
<211> 289
<212> DNA
<213> E. Coli

<400> 4
ggcagaattt tacgctgacc aatgacgcga cgacgtggca tggaaatact ccgttgttaa 60
ttcaggattg tccaaaactc tacgagttta gtttgacatt taagttaaaa cgtttggcct 120
tacttaacgg agaaccatta agccttagga cgcttcacgc catacttgga acgagcctgc 180
ttacggtctt taacgccgga gcagtcaagc gcaccacgta cggtgtggta acgaacaccc 240
gggaggtctt taacacgacc gtcacggatc aggatcacgg agtgctcct 289

<210> 5
<211> 815
<212> DNA
<213> E. Coli

<220>
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<222> (1)...(815)
<223> n = A,T,C or G

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aaatatgaag ggggagagcc cttatagacc aggtagtaca cgtttggtta gggggcctgc 120
atatggcccc ctttttcact tttatatctg tgcggtttaa tgccgggcag atcacatctc 180

cgaggatttt agaatggctg aaattaccgc atccctggta aaagagctgc gtgagcgtac 240
tggcgcaggc atgatggatt gcaaaaaagc actgactgaa gctaacggcg acatcgagct 300
ggcaatcgaa aacatgcgta agtccggtgc tattaaagca gcgaaaaaag caggcaacgt 360
tgctgctgac ggcgtgatca aaaccaaaat cgacggcaac tacggcatca ttctggaagt 420
taactgccag actgacttcg ttgcaaaaga cgctggtttc caggcgttcg cagacaaagt 480
tctggacgca gctgttgctg gcaaaatcac tgacgttgaa gttctgaaag cacagttcga 540
agaagaacgt gttgcgctgg tagcgaaaat tggtgaaaac atcaacattc gccgcgttgc 600
tgcgctggaa ggcgacgttc tgggttctta tcagcacggt gcgcgtatcg gccgttctgg 660
ttgctgctaa aagcgctgac gaagaactgg ttaaacacat cgttttgacc tttgttgcaa 720
gccaagccag aattcagaga aactttccgc ttcaccggag gtcccaccca cangganccc 780
cgattttntc agcatggtgg tcttcctncg gagtt 815

<210> 6
<211> 403
<212> DNA
<213> E. Coli

<400> 6
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ttaaaccatt tcattgcgat ttacacagaa cggacgtcct gtcgcagtat attaagtcgt 120
cgatagaaac aagcattgaa aggcacagca gtagtcaaac agtgtgaaac gctactggcg 180
ccttacagcg caaaaaggct ggtgactaaa aagtcaccag ccatcagcct gatttctcag 240
gctgcaaccg gaagggttgg cttatttaac ttcaacttca gcgccagctt cttccagagc 300
ttttttcagt gcttctgcgt cgtctttgct cacgccttct ttcagagcag ccggtgcaga 360
ttctaccagg tctttagctt ctttcagacc caggccagtt gcg 403

<210> 7
<211> 149
<212> DNA
<213> E. Coli

<400> 7
gagctttttt cagtgcttct gcgtcgtctt tgctcacgcc ttctttcaga gcagccggtg 60
cagattctac caggtcttta gcttctttca gacccaggcc agttgcgcca cgtactgctt 120
tgataacagc aactttgtta gcgccagca 149

<210> 8
<211> 742
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(742)
<223> n = A,T,C or G

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actttccgca atgcctgttg ctatcacgct taaaccattt cattgcgatt tacacagaac 120
ggacgtcctg tcgcagtata ttaagtcgtc gatagaaaca agcattgaaa ggcacagcag 180
tagtcaaaca gtgtgaaacg ctactggcgc cttacagcgc aaaaaggctg gtgactaaaa 240
agtcaccagc catcagcctg atttctcagg ctgcaaccgg aagggttggc ttatttaact 300
tcaacttcag cgccagcttc ttccagagct tttttcagtg cttctgcgtc gtctttgctc 360
acgccttctt tcagagcagc cggtgcagat tctaccaggt ctttagcttc tttcagaccc 420
aggccagttg cgccacgtac tgctttgata acagcaactt tgttagcgcc agcagctttc 480
agaattacgt cgaattcagt tntttcttca gcagcttcaa ccgggccagc agctacagct 540
acagcagcag caagcggaaa caccgaattt ttcttccatt gcagagatca gttctacaac 600

cgtccattac agacatagct gcaactgctt caatgatttt gatctttagt ggatagacat 660
ttaaattgtt cctgaattat caagaaataa gtnttatacg taagccgaaa tgcgttaaaa 720
aagataactg ngattaaagc ag 742

<210> 9
<211> 421
<212> DNA
<213> E. Coli

<400> 9
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aaagtcacca gccatcagcc tgatttctca ggctgcaacc ggaagggttg gcttatttaa 120
cttcaacttc agcgccagct tcttccagag ctttttttcag tgcttctgcg tcgtctttgc 180
tcacgccttc tttcagagca gccggtgcag attctaccag gtctttagct tctttcagac 240
ccaggccagt tgcgccacgt actgctttga taacagcaac tttgttagcg ccagcagctt 300
tcagaattac gtcgaattca gttttttctt cagcagcttc aaccgggcca gcagctacag 360
ctacagcagc agcagcggaa acaccgaatt tttcttccat tgcagagatc agttctacaa 420
c 421

<210> 10
<211> 126
<212> DNA
<213> E. Coli

<400> 10
agagcttttt tcagtgcttc tgcgtcgtct ttgctcacgc cttctttcag agcagccggt 60
gcagattcta ccaggtcttt agcttctttc agacccaggc cagttgcgcc acgtactgct 120
ttgata 126

<210> 11
<211> 262
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(262)
<223> n = A,T,C or G

<400> 11
ctgcaaccgg aagggttggc ttatttaact tcaacttcag cgccagcttc ttccagagct 60
tttttcagtg cttctgcgtc gtctttgctc acgccttctt tcagagcagc cgntgcagat 120
tctaccaggt ctttagcttc tttcagaccc aggccagttg cgccacgtac tgctttgata 180
acagcaactt tgttagcgcc agcagctttc agaattacgt cgaattcagt tttttcttca 240
gcagcttcaa ccgggccagc ag 262

<210> 12
<211> 202
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(202)
<223> n = A,T,C or G

<400> 12

gcgcataccc tgcagcatcg gcccgatgga gatcaggtcg gcagaacgct gtaccgcttt 60
gtaggtggtg ttaccggtgn tcagatccgg gaagatgaac acggtagcgc gacctgcaac 120
cggagagttc ggcgctttgg attncgcaac gtcagccatt accgcagcgt cgtactgcag 180
cggaccggcg atcatcaggt ca 202

<210> 13
<211> 261
<212> DNA
<213> E. Coli

<400> 13
tctaggagta agaatagctt caaattcagc agttgacagt ggcataaacg taactggtga 60
cttttgcccg gcatgacgcc gggctttttt tattattccg tgacttccag cgtagtgaag 120
gcaaacttct cgccatcaaa tagcccctga ctggttagtt ttagcgcggg gatcactggc 180
agagaaagaa acgccatctg aataaacggc tcatcgggta acggaccgca ttcacgggcg 240
gcggctttca aggcgtcaat t 261

<210> 14
<211> 224
<212> DNA
<213> E. Coli

<400> 14
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tttttattat tatggggaag gtgttattta tgagtttcat ttatgccgta acgacaatga 120
actcgggaat tagtataagc agcgcgagaa taataatcat tgtgcaaatg ctaatttaat 180
taatactatt taaatattat tttgagcata tgcacataag gttg 224

<210> 15
<211> 232
<212> DNA
<213> E. Coli

<400> 15
aattcccttc tttttttcgt caacggtgtc cagaatcatt ttatttacct cgggtactta 60
tgctgatttt tattattatg gggaaggtgt tatttatgag tttcatttat gccgtaacga 120
caatgaactc gggaattagt ataagcagcg cgagaataat aatcattgtg caaatgctaa 180
tttaattaat actatttaaa tattattttg agcatatgca cataaggttg gg 232

<210> 16
<211> 212
<212> DNA
<213> E. Coli

<400> 16
aatagcgggt atgcacgcct ttctttttttt cgtcaacggt gtccagaatc attttattta 60
cctcgggtac ttatgctgat ttttattatt atggggaagg tgttatttat gagtttcatt 120
tatgccgtaa cgacaatgaa ctcgggaatt agtataagca gcgcgagaat aataatcatt 180
gtgcaaatgc taatttaatt aatactattt aa 212

<210> 17
<211> 433
<212> DNA
<213> E. Coli

<400> 17
ccttgtaaat tatcgcccgt ggcataaaaa ctgcgtccaa acgccgtctt tgccagcagc 60

caggccataa atgccaccag aattatcgtc aaccaaccaa ttgctgaaac gccaagcagc 120
agcggggcgg agagctgttt cagttcggcg ggtaaccctt caatccattt gccgccagtc 180
cacagcaaca tgatgcctct gtacaaccct aacgtgccaa gggtggcaac aatggcaggg 240
atctttagcc acgcgaccag gacaccgttg aaaaatcccg cgagcaaacc aagcagtaaa 300
gtcgcgacac aagcaacagg tagtgaatat cctgcgttca gtaacatccc caacagcacc 360
gcgcacattc cggtaatcga acccactgaa acatcaatat tgcgcgtaag cattaccagc 420
gtcgcgccca ttg 433

<210> 18
<211> 658
<212> DNA
<213> E. Coli

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tccttccccg ttgaggacac cgggttgtca ggttgaccat acgcttaagt gacaaccccg 120
ctgcaacgcc ctctgttatc aattttctgg tgacgtttgg cggtatcagt tttactccgt 180
gactgctctg ccgccctttt taaagtgaat tttgtgatgt ggtgaatgcg gctgagcgca 240
cgcggaacag ttaaaaccaa aaacagtgtt atgggtggat tctctgtatc cggcgttaat 300
tgttaactgg ttaacgtcac ctggaggcac caggcactgc atcacaaaat tcattgttga 360
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tggtgtcact atcagtaacc cagtatttac tgaagatgcc attaacaaga gaaaacaaga 480
acgggagcta ttaaataaaa tatgcattgt ttcaatgctg gctcgtttac gtctgatgcc 540
aaaaggatgt gcacaatgaa ttcagcattt gtgcttgttc tgacagtttt tcttgtttcc 600
ggagagccag ttgatattgc agtcaagtgg tcacaggaca atgcaggagt gtatgact 658

<210> 19
<211> 588
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(588)
<223> n = A,T,C or G

<400> 19
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cacgcggaac agttaaaacc aaaaacagtg ttatgggtgg attctctgta tccggcgtta 120
attgttaact ggttaacgtc acctggaggc accaggcact gcatcacaaa attcattgtt 180
gaggacgcga taatgaaaac gttattacca aacgttaata cgtctgaagg ttgttttgaa 240
attggtgtca ctatcagtaa cccagtattt actgaagatg ccattaacaa gagaaaacaa 300
gaacgggagc tattaaataa aatatgcatt gtttcaatgc tggctcgttt acgtctgatg 360
ccaaaaggat gtgcacaatg aattcagcat ttgtgcttgt tctgacagtt tttcttgttt 420
ccggagagcc agttgatatt gcagtcagtg ttcacaggac aatgcangag tgtatgactg 480
cagcaacccg aacagaaaat tcccggtaac tgttacccgg tcgataaagt tattcaccag 540
gataatatcg aaatcccggc aggtctttaa aacagttccg taataaat 588

<210> 20
<211> 101
<212> DNA
<213> E. Coli

<400> 20
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ctgacctttc ttcgcaataa gcacgccatt agcgtcatag a 101

<210> 21
<211> 465
<212> DNA
<213> E. Coli

<400> 21
tcgcgtgttt accttcaaca tcggtaactt tctggcggat agtttcacgg taagcaacct 60
gcggtttacc tacgttcgct tcaacgttga attcacgctt catacggtca acgatgatgt 120
cgaggtgcag ttcgcccata cccgcgatga tggtctggtt agattcttcg tcagtccata 180
cacggaaaga cgggtcttct ttagccagac ggcccagagc cagacccatt ttttcctggt 240
cagctttggt tttcggttca actgcgatgg agattaccgg ctcagggaat tccatacgtt 300
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cgatagcagc agcgatgtcg cccgcgcgaa cttctttgat ctcttcacgt ttgttagcgt 420
gcatctgaac gatacgaccg aaacgctcac gtgcagcttt cacgg 465

<210> 22
<211> 859
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(859)
<223> n = A,T,C or G

<400> 22
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cagccagttt aaacgccagt tcagaggagt caacgtcatg gtaagaaccg aagtgcagac 120
gaatacccat gtctactacc gggtagcctg ccagcggacc tgctttcagc tgttcctgga 180
taccttttatc aacggccggg atgtattcgc cagggattac accaccttta atgtcgttga 240
tgaactcgta gcctttcggg tttgaacccg gctccagcgg gtacatgtcg ataacaacat 300
gaccatactg accacgacca ccagactgtt tcgcgtgttt accttcaaca tcggtaactt 360
tctggcggat agtttcacgg taagcaacct gcggtttacc tacgttcgct tcaacgttga 420
attcacgctt catacggtca acgatgatgt cgaggtgcag ttcgcccata cccgcgatga 480
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anggngtacc agggggggtac ntnttttttaa nancgattgc cagcancgga tntnncccgn 720
gccnaacttc tttggaacnn tttaccggtt ggtaaccngc cttttnaacn atccaaccga 780
aaaagngtta anngccantt ttccnggngt tnanntncgg nttcccngaa ntaacccncc 840
cggggtnaac ccngnaaaa 859

<210> 23
<211> 269
<212> DNA
<213> E. Coli

<400> 23
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agtcaacgtc atggtaagaa ccgaagtgca gacgaatacc catgtctact accgggtagc 120
ctgccagcgg acctgctttc agctgttcct ggataccttt atcaacggcc gggatgtatt 180
cgccagggat tacaccacct ttaatgtcgt tgatgaactc gtagcctttc gggtttgaac 240
ccggctccag cgggtacatg tcgataaca 269

<210> 24
<211> 330
<212> DNA

<213> E. Coli

<400> 24
gttttgggga gatgtaaggg ctaatctgaa tggctgcatt ccttgtttaa ggaaaaacga 60
atgactgatt gccgatacct gattaaacgg gtcatcaaaa tcatcattgc tgttttacag 120
ctgatccttc tgttcttata acacaaggaa acgtacttaa ggtgcgtccg gtgaaccagt 180
cggacgcacc tttaataact ataaataagt gtctgggcag atactatata aattaactta 240
gtgaatgatt atgctaatgt catcaattaa ataaatataa tggcgttaag gcttcccagt 300
aatataatta atactctact tccagagtag 330

<210> 25
<211> 471
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(471)
<223> n = A,T,C or G

<400> 25
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atgactgatt gccgatacct gattaaacgg gtcatcaaaa tcatcattgc tgttttacag 120
ctgatccttc tgttcttata acacaaggaa acgtacttaa ggtgccgtcc ggtgaaccag 180
tcggacgcac ctttaataac tataaataag tgtctgggca gatactatat aaattaactt 240
agtgaatgat tatgctaatg tcatcaatta aataaatata atggcgttaa ggcttcccag 300
taatataatt aatactctac ttccagagta gaatattaaa ttttatccgc gtggtgcatc 360
agcacaaatt tatcccacaa ctgttcttct gtctcgacat gccccccgat ctttnacaaa 420
tantattggg ggattnggcc cnccttttng ncaggttggg gtcntctnat g 471

<210> 26
<211> 379
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(379)
<223> n = A,T,C or G

<400> 26
natctgantg gctgcattcc ttgtttaagg aaacccgaat gactgattgc cgatacctga 60
ttaaacgggt catcaaaatc atcattgctg ttttacagct gatccttctg ttcttataac 120
acaaggaaac gtacttaagg tgcgtccggt gaaccagtcg gacgcacctt taataactat 180
aaataagtgt ctgggcagat actatataaa ttaacttagt gaatgattat gctaatgtca 240
tcaattaaat aaatataatg gcgttaaggc ttcccagtaa tataattaat actctacttc 300
cagagtagaa tattaaattt tatccgcgtg gtgcatcagc acaaatttat cccacaactg 360
ttcttctgtc tcgacatgc 379

<210> 27
<211> 799
<212> DNA
<213> E. Coli

<400> 27
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caaaaaacac taaatcaaaa aataatggca ttagaaaata taatgcgaaa acggaggtga 120

aattagttta tttcaaatga ggaaaatctc ccggcgaaaa aaccgggaga tgaaagtgtg 180
atgggtatca aataaacaac agaggagaaa tttttaacgc agccattcag gcaaatcgtt 240
taatcccatt gcctggcgga taagttgcgg cttaacgcca ggaagcgtgt cggccagttt 300
caaaccaata tcacgcagca gttttttcgc cggattggta ccggaaaaca gatcgcggaa 360
tccctgcata ccagccagca tcaacgccgc actgtgcttg cggctacgct catagcgacg 420
cagataaatg tactgcccga tgtctgggat ccgtcgacct gcagccaagc ttgggctttt 480
cagcctgata cagattaaat cagaacgcag aagcggtctg ataaaacaga atttgcctgg 540
cggcagtagc gcggtggtcc cacctgaccc catgccgaac tcagaagtga aacgcccgta 600
gcgcccgatg gtagtgtggg gtctccccat gcgagagtag ggaactgcca ggcatcaaat 660
aaaacgaaag gctcagtcga aagactgggc ctttcggttt atctggtggt tgtcggtgaa 720
cgctctctga gtaggacaaa tccgccggga gcggattttg aacgttgcga aacaaccggc 780
ccggaaaggg gtgggggct 799

<210> 28
<211> 636
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(636)
<223> n = A,T,C or G

<400> 28
aggggtttg ttgtgggcaa tgatgcattt aagttatcgt ctgcagatag aggagatatt 60
acaataaaca acgaatcagg gcatttgata gtcaataccg caattctatc aggagatata 120
gtcactctaa gaggaggaga aattaggttg gtattatagc ttgtgcgcgc catgattggc 180
gcgcaattta aacttagtgc tttacatcgc tattgtcttg atttctttga attatttttat 240
aaattaaaaa aacgactgtt atgtataagc aaaggtcgaa cgaaaaatac attccaaata 300
aatgcttgct taaatctcta tatccttccc cgaaaaatga cacataaaat tgagatattc 360
caaaaagaga tactacaaat aaagatgcct ttatttttatt atttctaata aaaatagaag 420
caataaaaaa taataacaat gatataaatc taatgttttt aaatatattg tcttttatgt 480
tagtaatagt cgttagtatg tttgattctc catatattac gtgtagtttt ttatatacat 540
ggaaataatt ntctttatac tgagacatca caccatcatc aaatggaagt ttgaagatgg 600
tgcttggttt gctaaccaat aaaaagagtg cattcg 636

<210> 29
<211> 757
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(757)
<223> n = A,T,C or G

<400> 29
cagcggtcgt atttttagca tggtttttta ttggcggcta tgctgccccg ggagcataaa 60
gatgaaaaaa acaacgatta ttatgatggg tgtggcgatt attgtcgtac tcggcactga 120
gctgggatgg tggtaacgtc acctctaaaa aatagcaaag gctgcctgtg tgcagccttt 180
gtgcaattta agcgttaact tttaatcttc ctgtagataa atagcacgac aatcgcacca 240
ataacggcaa ccacgaagct gccaaaattg aagccatcga ctttaccaaa gccaaacagc 300
gtgctgatcc atccgccgac tacggcaccg actatcccca gcaggatagt cataaagaat 360
ccacctccat ctttacctgg catgatccac ttcgccagaa taccggcaat aagcccaaaa 420
ataatccatg acagaatgcc cattgtttcc tcacttatct gttttgcatt agcgggttag 480
tcgctgataa aaagcatagc acaacatcgg gagggcaaga tttgtgacga gcatcacgga 540
ggtttttttt gcgatggcgc agaaattgcg ccatcaacga tcagtgataa ttaccaacca 600

caaacatcat gttcgttttc cgtgtcataa gaaccgtacg ggattcacca gatcttttat 660
cacttcaagc cggcacttct ggcaccagca aagtcatcgg cgtctctggt tcataatcga 720
ccggaaacgc cattgctggt attggtgacn gtcacgg 757

<210> 30
<211> 392
<212> DNA
<213> E. Coli

<400> 30
aattacagaa aaaggaggca atatcgggta aaggcattag cccgacgaat acgtcgggct 60
acaaatatta ttgtgctgca ggtgttttag cgggttgttg atccacaggt tctaactgga 120
agaccacatc gacctgatca tcaaactgaa tagcggcctg ctcgtaagtt tcctgggcgg 180
acaccggcgc ggcatcggct ttcatcatcc gcaccattgg gctgggctga tagttggaaa 240
catggtagcg cacgctatat accggcccca gtttacgatg aaagccgttc gccagttcct 300
gcgcctgatg aatcgcgtta tcaatcgctg ccttacgcgc tttgtcttta taggcatccg 360
gctgcgccac gcccagcgac acagaacgaa tt 392

<210> 31
<211> 351
<212> DNA
<213> E. Coli

<400> 31
ctatccttga tgaaaccgcg agcaaagata ggtgattacg tcatggtttt acagaaaatt 60
acagaaaaag gaggcaatat cgggtaaagg cattagcccg acgaatacgt cgggctacaa 120
atattattgt gctgcaggtg ttttagcggg ttgttgatcc acaggttcta actggaagac 180
cacatcgacc tgatcatcaa actgaatagc ggcctgctcg taagtttcct gggcggacac 240
cggcgcggca tcggctttca tcatccgcac cattgggctg ggctgatagt tggaaacatg 300
gtagcgcacg ctatataccg gccccagttt acgatgaaag ccgttcgcca g 351

<210> 32
<211> 762
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(762)
<223> n = A,T,C or G

<400> 32
aattatgaaa cactgtctgg aatcgtctga atgacgggca catttgcgag cacgcatcca 60
gtaataacac aggaaactat tttatctacg cgttagcgat agactgcttg catggcgaaa 120
ggaggtaagc cgacgatttc agcgggacgc tgaaacggga aagcccctcc cgaggaaggg 180
gccataaata aggaaagggt catgatgaag ctactcatca tcgtggtgct cttagtcata 240
agcttccccg cttactaaga ctaccagggc gggggaaacc ccgctctacc ctcactcctg 300
aaagtatgcc ttcacgataa gattgtcaat ccgcaggctt tgtagtctgc gatcctgcca 360
gcaaatattc tttgcgagtc gttacgcaat aatcacagag gaaactattt tattcacgcg 420
ttagcgatag actgcattca gggcgaaagg aggtaagccg atgatttcag cgggacgctg 480
aaacgggaaa gcctctcccg gagaagaggg cttttaataa ggaaagggtt atgatgaagc 540
acgtcatcat actggtgata ctcttagtga ttagcttcca ggcttactaa gaacaccagg 600
gggaggggga aacctcttcc taaccctcac ttctgaaatt gggtgctatg acgctggcgt 660
tactgcttan cgctaccagt ttgtctgccc tggcggttgt aacgccagat cggtacccgt 720
ttggatattt taatgaaagc cgacaaatca atcancgtga cg 762

<210> 33

<211> 293
<212> DNA
<213> E. Coli

<400> 33
gcacatttgc gagcacgcat ccagtaataa cacaggaaac tattttatct acgcgttagc 60
gatagactgc ttgcatggcg aaaggaggta agccgacgat ttcagcggga cgctgaaacg 120
ggaaagcccc tcccgaggaa ggggccataa ataaggaaag ggtcatgatg aagctactca 180
tcatcgtggt gctcttagtc ataagcttcc ccgcttacta agactaccag ggcgggggaa 240
accccgctct accctcactc ctgaaagtat gccttcacga taagattgtc aat 293

<210> 34
<211> 633
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(633)
<223> n = A,T,C or G

<400> 34
atttacactt tttacgaaat catgggatca ctaacaaaat atcgcttgtc agttatattg 60
tatggcagga aagatatgcg actgatatta cagatcccca aagtggagag tttatgacca 120
ttaaaaataa gatgttgctg ggtgcgcttt tgctggttac cagtgccgcc tgggccgcac 180
cagccaccgc gggttcgacc aatacctcgg gaatttctaa gtatgagtta agtagtttca 240
ttgctgactt taagcatttc aaaccagggg acaccgtacc agaaatgtac cgtaccgatg 300
agtacaacat taagcagtgg cagttgcgta acctgcccgc gcctgatgcc gggacgcact 360
ggacctatat gggtggcgcg tacgtgttga tcagcgacac cgacggtaaa atcattaaag 420
cctacgacgg tgagattttt tatcatcgct aaaaaaagcc ccctcatcat gaggggggaaa 480
tgcagacacc ttgntatttt ttattattag ccacttgctc gtcttgcttg gtattaagtc 540
gtatttcacg ttgattaatg cnggtggctc cagtgcgcca gattaacttt gtttggatcg 600
aagacgtagt aactggctgg ttatcggaat tgg 633

<210> 35
<211> 569
<212> DNA
<213> E. Coli

<400> 35
tatggcagga aagatatgcg actgatatta cagatcccca aagtggagag tttatgacca 60
ttaaaaataa gatgttgctg ggtgcgcttt tgctggttac cagtgccgcc tgggccgcac 120
cagccaccgc gggttcgacc aatacctcgg gaatttctaa gtatgagtta agtagtttca 180
ttgctgactt taagcatttc aaaccagggg acaccgtacc agaaatgtac cgtaccgatg 240
agtacaacat taagcagtgg cagttgcgta acctgcccgc gcctgatgcc gggacgcact 300
ggacctatat gggtggcgcg tacgtgttga tcagcgacac cgacggtaaa atcattaaag 360
cctacgacgg tgagattttt tatcatcgct aaaaaaagcc ccctcatcat gaggggggaaa 420
tgcagacacc ttgttatttt ttattattag ccacttgctc gtcttgcttg ttattagtcg 480
tatttcacgt tgattaatgc ggttgcctcc agtgcgccag atttaacttt gtttgtatcg 540
tagacgtagt aactggctgg tatcggaat 569

<210> 36
<211> 338
<212> DNA
<213> E. Coli

<400> 36

cgtattcaca tccttttgat tggtgataac atgcgaatcg gtattatttt tccggttgta 60
atcttcatta cagcggtcgt atttttagca tggtttttta ttggcggcta tgctgccccg 120
ggagcataaa gatgaaaaaa acaacgatta ttatgatggg tgtggcgatt attgtcgtac 180
tcggcactgc ctgggatggt ggtaacgtca cctctaaaaa atagcaaagg ctgcctgtgt 240
gcagcctttg tgcaatttaa gcgttaactt ttaatcttcc tgtagataaa tagcacgaca 300
atcgcaccaa taacggcaac cacgaagctg ccaaaatt 338

<210> 37
<211> 375
<212> DNA
<213> E. Coli

<400> 37
ctgaatattt aaaaaggaaa acgacatgaa accgaagcac agaatcaaca ttctccaatc 60
ataaaatatt tccgtggagc attttattat tgaatataga ggtttaactc cggtaaaaaa 120
caaagaagca ttgaatgcag ggaaaaataa tatggccata aaaaacatcg aaagaaactc 180
ttttaattta acatgtaaac gcatggttaa tcctcatatc acgggtggag tgttaagaac 240
atacataaat ggagtcatgt tttccctttt ccatttatca agttcctgtt gccgttttag 300
tccatctcta attgcatatt ttaatttttc tgataaatgg cattgagcat cgatttcatt 360
taaaacaact gtaca 375

<210> 38
<211> 446
<212> DNA
<213> E. Coli

<400> 38
ttacgatagc tattagtaaa aatataagag ttagctgtat tgttatgtct gtggcgaaat 60
tgactacctt cgttttttg attaagaatg attttattat cgtaagtaaa attacatgaa 120
tatttaaaaa ggaaaacgac atgaaaccga agcacagaat caacattctc caatcataaa 180
atatttccgt ggagcatttt attattgaat atagaggttt aactccggta aaaaacaaag 240
aagcattgaa tgcagggaaa aataatatgg ccataaaaaa catcgaaaga aactctttta 300
atttaacatg taaacgcatg gttaatcctc atatcacggg tggagtgtta agaacataca 360
taaatggagt catgttttcc cttttccatt tatcaagttc ctgttgccgt tttagtccat 420
ctctaattgc atattttaat ttttct 446

<210> 39
<211> 392
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(392)
<223> n = A,T,C or G

<400> 39
tcaccccggt gccgattttc aggcatcctg atttaactta gcacccgcaa cttaactaca 60
ggaaaacaaa gagataaatg tctaatcctg atgcaaatcg agccgatttt ttaatcttta 120
cggacttta cccgcctggt ttattaattg cactgtnatc cgggcgttcg cccgctttaa 180
tcacaatagg ctgtgtagcc tgggcctgtt tctctttcac ccgcgccaga gcggcagcaa 240
tcgcatcttt atctttggct gcaggttgaa cggctgcgct cttatgtcgt tcaaggcgag 300
ccgcttttc gcgctccaga cgagcctggc gcgcttcgaa acgcgctttg gcttctgcgg 360
cncgcttttc ttcctgacga atagccgcaa tt 392

<210> 40
<211> 208

<212> DNA
<213> E. Coli

<400> 40
taataacgct atctgcggat aaagcagaat aggtggttaa ccccagacat aaaccgagga 60
aaataatgtt attgtatttc ataatctatt gttccttagc gacagattgc tgtctgctgg 120
ttcagtaagg taccaggaga aacttcagga agcttgtact cgacaataca gtttgagttt 180
ttatctttgc cccatgaaac ctgtaatt 208

<210> 41
<211> 342
<212> DNA
<213> E. Coli

<400> 41
catcctcaat accgttaaat gcaacccgaa cccccgttgt ccctttgctg cattcactta 60
acgtaatctg aaaagggacg gctggacttg tgctaccggt cgttggaaat tgtctggcac 120
tgtttttttg gagatctacg gtaaaattaa gcgaatccga tgagactgtg cagccataat 180
cgaggacgcg cccgctaatt ttaataacgc tatctgcgga taaagcagaa taggtggtta 240
accccagaca taaaccgagg aaaataatgt tattgtattt cataatctat tgttccttag 300
cgacagattg ctgtctgctg gttcagtaag gtaccaggag aa 342

<210> 42
<211> 841
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(841)
<223> n = A,T,C or G

<400> 42
agatttactg ccaatttccg gcagatcgga aagggttaaa ccatattgat ccataagggt 60
acgaatcacg gctataccgc caggcatggc ttgagccatg gcattaaatt ccgcaaattc 120
gggcgctgat tcttcccacg cggttatttt ggcacacacc agatccagca aggggttntc 180
aggatcgttg agcagcagat gatctaccag ttncagcgcc tgggtgtatt gntccttgtt 240
ctgaataccc gnnagaaaag gtgccacagc anttagcttn tctcctgctt gcaagatgtc 300
tggcaatngc aatcattttt tgcacttant acgatgnaca ncngtaaaga aatcgnattt 360
ttntatgccg tcataacttt acgtatgtan cacttttttgc nattcnaaaa aagaccattn 420
gctncaacac gtaaatttna ttgnccccna catttanaac ataaatgntt aaaatttttcc 480
ccccncnnan ttttaagntn ttnanagaat ngggaattac ctgcttttna atgnactcan 540
antttttng naataattcc tntatcnaan ctnnttttcn cccaanagnc nnccaaattn 600
cggtttnntn nttnncnngg cnttttttta cccnanaann tttattcaan nccttttttg 660
tagnctattt naagnggnct ttnttnnatt aactttccnn ttggncaaat tttggcnnat 720
ttttatatan aattntctta tntcntaatt tnggnanccc cngatgnaan tttatggngg 780
gantcccnnt ccctntttaa tnnatgntct gggntatttt taaancctnn attaannnan 840
c 841

<210> 43
<211> 215
<212> DNA
<213> E. Coli

<400> 43
aataactttt cgttaggcag ttttgggtgt gagttgcaag aggggagact actgaataac 60
tcaagtttta taatcgaggg gaaaatggtg atggcgttca tagcaaaacg ccctcaacca 120

taaaggtcga gggcgcttaa gatgttaaaa acccgctatc cgttaaaaaa caatgttcaa 180
ctaaggtcag tgacattgcg ctaaaaaagc gaatt 215

<210> 44
<211> 395
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(395)
<223> n = A,T,C or G

<400> 44
gcattattca tgagaaatgt gtatcgtaaa tcaactgaaa ttaacgcaac catttgttat 60
ttaaggttta attatctgtg tgtgatattt tattgaatgt tttaaatatt gtttttattg 120
gcattgctat aatattggtt atcatttgct gaatggattc agtcttaatg agtgggtttt 180
taagggacag gcatagagta atgatacgta tgcataacca acatctttac tcattatgtc 240
attgaatgtt gaccctatgt gtttatgaag gagaggtatt ttcagttgat ctggattgnt 300
aaattcatat aatgcgcctt tgctcatgaa tggatgccag tatgtagtgg gaaattataa 360
atattgaaat agtccaacta cttctttatt accaa 395

<210> 45
<211> 883
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(883)
<223> n = A,T,C or G

<400> 45
ataatcaggt aagaaaaggt gcgcggagat taccgtgtgt tgcgatatat tttttagttt 60
cgcgtggcaa tacatcagtg gcaataaaac gacatatcca gaaaaatata cactaagtga 120
atgatatctt ccgatttatc ttaatcgttt atggataacg gcaaagggct tcgtttttc 180
ctatacttat tcagcactca caaataaagg aacgccaatg aaaattatac tctgggctgt 240
attgattatt ttcctgattg ggctactggt ggtgactggc gtatttaaga tgatatttta 300
aaattaatta atgtcatcag gtccgaaaat aacgagaata tttcagtctc tcatcctgtt 360
gcgctcctgt catgtgcatt gcttcatata atcactggcg caaggagcgc cgcaggcgna 420
gnntgcncgn cgncccacct naccccatgc cgaacttcag aantgaaaac nccntaacnc 480
cgatngtcgg cgggngcctc cccatgcnan agtangggaa ntgccangcg ncnnattaaa 540
cgaaaggctn attncaaaga ctgggccttn cntttatctg atgtttgtcg gagaacgctc 600
tcctgagnan gacaaatncc gccgggagcg gatttgaacn ttgcgaagca accgncccna 660
agggngnngt cntgacnccc nnctctanct nncngccttc ttttgcttna angncctcct 720
ancngatggc ctttttngcc ntctaccaaa cnntttggtt aatgcttnta aaanccttc 780
cannntncaa tccngtnntn cccatccnnn tnntgaaagn ntncctnccn tgtncantnt 840
anntnnggggg gnngngngcc ggcggncccc ccccccccc ccc 883

<210> 46
<211> 1024
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(1024)

<223> n = A,T,C or G

<400> 46
gtttatggat aacggcaaag ggcttcgttt tttcctatac ttattcagca ctcacaaata 60
aaggaacgcc aatgaaaatt atactctggg ctgtattgat tattttcctg attgggctac 120
tggtggtgac tggcgtattt aagatgatat tttaaaatta attaatgtca tcaggtccga 180
aaataacgag aatatttcag tctctcatcc tgttgcgctc ctgtcatgtg cattgcttca 240
tataatcact ggcgcaagga gcgcgcagag tnctccnant nnnnntnntt ntntnnctnn 300
nccttcacna tncnnccncn nantnnatag nncaccnntn ttnntcnnnn gnccncctcc 360
nnncnnnnnn ncatnnnatc ccactnnntt tnctccannn nnncnnnntn canccnacaa 420
antncnaccn anntnacctt atacnnannc nancnnnnnn nnccactctn nctcgnnctc 480
cccnttcnac nnccannnnn cancnntcnn ctnnnnccct nncntaattn ttctnnctan 540
ntcctanccn cnnacnnncc cancnatccn nnnatacant cnattnntnn cnntcncntn 600
cnccnnttcc nnctnnncnc tnccncatnc ccnnnnannan canntncccc ncctncctna 660
ccncncncnc ccnccatccc nnnccnncnt ccnnantnga caannnnaat cncnnnnncn 720
nnnnnncnnn tnnncnnccn gcncnnccnt nccntcacnc tnnncnncta nannnnntac 780
nntnaccnnt cctnncacnc tnccctnnng antccnacna ntnnnnnanc nanaacnctn 840
tnnnnccata atcccacacc acncccntnc ancntntnnt ncntcntccc ttcntatcnc 900
agctnnnnnt nctntnnnnc tnccncccnn cnnactncnn nnacccncnn cccantcagt 960
ccaccntccn cnncnnnntn nnncnancan ctnncacncn cnantaacct nntnncacct 1020
tccc 1024

<210> 47
<211> 236
<212> DNA
<213> E. Coli

<400> 47
atatacacta agtgaatgat atcttccgat ttatcttaat cgtttatgga taacggcaaa 60
gggcttcgtt ttttcctata cttattcagc actcacaaat aaaggaacgc caatgaaaat 120
tatactctgg gctgtattga ttattttcct gattgggcta ctggtggtga ctggcgtatt 180
taagatgata ttttaaaatt aattaatgtc atcaggtccg aaaataacga gaatat 236

<210> 48
<211> 418
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(418)
<223> n = A,T,C or G

<400> 48
cggagattac cgtgtgttgc gatatatttt ttagtttcgc gtggcaatac atcagtggca 60
ataaaacgac atatccagaa aaatatacac taagtgaatg atatcttccg attnatctta 120
ntcgtttatg gataacggca aagggcttcg ttttttccta tacttattca gcactcacaa 180
ataaaggaac gccaatgaaa attatactct gggctgtatt gattattttc ctgattgggc 240
tactggtggt gactggcgta tttaagatga tattttaaaa ttaattaatg tcatcaggtc 300
cgaaaataac gagaatattt cagtctctca tcctgttgcg ctcctgtcat gtgcattgct 360
tcatataatc actggcgcaa ggagcgcgca nggggcggcc aatcgccgcc ggcccctg 418

<210> 49
<211> 550
<212> DNA
<213> E. Coli

<400> 49
ctgctagtta cagggaacac taatgacaga cagctaaaag ccctgtttaa ttacgtatta 60
caaacagggg atgcccagcg ttttcgtgca tttattggtg agatagcgga acgcgcacca 120
caagaaaagg agaaactgat gaccattgct gacagattac gtgaagaagg cgcaatgcag 180
ggcaaacacg aagaagccct gcgtattgct caggagatgc tggatagagg tttagacaga 240
gagttagtta tgatggtgac ccgactttca ccagacgatc ttatcgcgca aagccactaa 300
tcctgtaaca ccgggagtta actggcggat gtttgctgta aaccacatca gcgaacgaca 360
tccgccagcg cctcttctaa atcgtaccag cgaaacgcaa aacccgcttc ttccagccgt 420
ttaggcagcg cgcgttgtcc acctaatacc agtactgaag attcgcccat taacagtcga 480
atggcggtcg cggggacgcg caaaatggcc gggcgatgca gcgcatgacc gagcgcatgg 540
gcaaattgtt 550

<210> 50
<211> 99
<212> DNA
<213> E. Coli

<400> 50
ttggcatctc ggtgttgccg atcttcatga tatccagccc gccggaaact tcttcccaaa 60
cggttttgct gttatccatt gagtcacgga actgcccct 99

<210> 51
<211> 259
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(259)
<223> n = A,T,C or G

<400> 51
ccgtgccgag atgatcctgt naccatcatc cgttgtgaag tagtgattca cgacttcaag 60
gcgcttttca aaagggtatt ttggctttga catattaggg gctattccat ttcatcgncc 120
aacaaaatgg gtgcagtaca tactcnttgg aaatcaacac aggaggctgg gaatgccgca 180
gaaatataga ttactttctt taatagtgat ntgtttcacg cttttatttt tnaaanaagt 240
tnggcttact tcccgggnn 259

<210> 52
<211> 877
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(877)
<223> n = A,T,C or G

<400> 52
cagcagagcg cggccttctt cgtcagattt cgcagtagtg gtaatggtaa tatccaaacc 60
acgaacgcgg tcgactttat cgtagtcgat ttctgggaag atgatctgct cacggacacc 120
catgctgtag ttaccacgac cgtcgaaaga cttagcggac aggccacgga agtcacggat 180
acgaggtaca gcaatagtga tcaggcgctc aaagaactcc cacatgcgtt cgccacgcag 240
agttacttta cagccgatcg gatagccctg acggattttg aagcctgcaa cagatttgcg 300
tgctttggtg atcagcggtt tttgaccgga gattgctgcc aggtctgctg ctgcgttatc 360
cagcagtttt ttgtcagcga tcgcttcacc aacacccatg ttcagggtga tcttctcgac 420
ccgagggact tgcatgacag aattgtagtt aaactcagtc atgagttttt taactacttc 480

gtctttgtag taatcatgca gtttcgccat cgtactactc catgtcggtg aacgctctcc 540
tgagtaggac aaatccgccg ggagcggatt tgaacgttgc gaagcaacgg cccggagggt 600
ggcgggcagg acgcccgcca taaactgcca ggcatcaaat taagcagaag gccatcctga 660
cggatggcct ttttgcgttt ctacaaactc ttttggttat ttttctaaat cattcaaata 720
tgtatccgnt catcccatcc tatcgatgat aagctgtcaa acatgagaat ttaatcaatc 780
taaagtttta tggngttaaa cttgggctgg cagnttncca atggcttaat cagtngaggg 840
ccctatntta acgaactngg ctantttngg tcaatcn 877

<210> 53
<211> 291
<212> DNA
<213> E. Coli

<400> 53
tgaacagcag agatacggcc agtgcggcca atgtttttg tcctttaaac ataacagagt 60
cctttaagga tatagaatag gggtatagct acgccagaat atcgtatttg attattgcta 120
gtttttagtt ttgcttaaaa atattgttag ttttattaaa tgcaaaacta aattattggt 180
atcatgaatt tgttgtatga tgaataaaat atagggggt atagatagac gtcattttca 240
tagggttata aatgcgacta ccatgaagtt tttaattgaa agtattgggt t 291

<210> 54
<211> 282
<212> DNA
<213> E. Coli

<400> 54
ttattaaatg caaaactaaa ttattggtat catgaatttg ttgtatgatg aataaaatat 60
agggggtat agatagacgt cattttcata gggttataaa tgcgactacc atgaagtttt 120
taattgaaag tattgggttg ctgataattt gagctgttct attcttttta aatatctata 180
taggtctgtt aatggatttt atttttacaa ttttttgtgt ttaggcatat aaaaatcaac 240
ccgccatatg aacggcgggt taaaatattt acaacttagc aa 282

<210> 55
<211> 293
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(293)
<223> n = A,T,C or G

<400> 55
cggggtccgg cgctcatcaa caatcggggg gcagcaaggg gctgaaacgg gaaagcccct 60
cccgaagaag gggccttgta taaggaaagg gttatgatga agctcgtcat catactggtt 120
gtgtngttac tgttaagttt cccgacttac taacaactca tcagaggggg gagaaatcct 180
cccttaccct tgttccttta ctctaggttg aaaaaacaac agcgtcaata ggcctgccat 240
gtacgaagcg agatctgtga accgctttcc ggttagcctt ttttatcctg ttg 293

<210> 56
<211> 300
<212> DNA
<213> E. Coli

<400> 56
tctgcgttcc gctaaaaggt gcaaatgctc aggacgttgc agcgttttgc gtgaccgctc 60
ggggaaggca aaattgcctc tgggaaagca ttgcgcgggg tccggcgctc atcaacaatc 120

gggggggcagc aaggggctga aacgggaaag cccctcccga agaaggggcc ttgtataagg 180
aaagggttat gatgaagctc gtcatcatac tggttgtgtt gttactgtta agtttcccga 240
cttactaaca actcatcaga ggggggagaa atcctccctt acccttgttc ctttactcta 300

<210> 57
<211> 359
<212> DNA
<213> E. Coli

<400> 57
caacacagga ggctgggaat gccgcagaaa tatagattac tttctttaat agtgatttgt 60
ttcacgcttt tatttttcac ctggatgata agagattcac tgtgtgaatt gcatattaaa 120
caggagagtt atgagctggc ggcgttttta gcctgcaaat tgaaagagta agagtcttcg 180
gcgggaaatt attcccgcct tacttacggc gttgcgcatt ctcattgcac ccaaatttat 240
tcttcacaaa aataataata gattttatta cgcgatcgat tatttatttc ctgaaaacaa 300
ataaaaaaat ccccgccaaa tggcagggat cttagattct gtgcttttaa gcagagatt 359

<210> 58
<211> 700
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(700)
<223> n = A,T,C or G

<400> 58
aaacctttt ctcctgtttt tcatagaggg caacccatgt cctgacctgg gttcggggga 60
caccaaaacg tgccgagatg atcctgtaac catcatcagt tgtgaagtag tgattcacga 120
cttcaaggcg cttttcaaaa gggtattttg gctttgacat attaggggct attccatttc 180
atcgtccaac aaaatgggtg cagtacatac tcgttggaaa tcaacacagg aggctgggaa 240
tgccgcagaa atatagatta ctttctttaa tagtgatttg tttcacgctt ttatttttca 300
cctggatgat aagagattca ctgtgtgaat tgcatattaa acaggagagt tatgagctgg 360
cggcgttttt agcctgcaaa ttgaaagagt aagagtcttc ggcgggaaat tattcccgcc 420
ttacttacgg cgttgcgcat tctcattgca cccaaattta ttcttcacaa aaataataat 480
agattttatt acgcgatcga ttatttattt cctgaaaaca aataanaaaa tccccgccaa 540
atggcaggga tcttagattc tgtgctttta agcagagatt acaggctggt tacgttacca 600
gctgccgggc ctttaacgcc gctttcgatg gtgaaggaca ctttctgacc ttcgtccaga 660
gattgtaacc atcggtctgg atagccnaga aatgtccaac 700

<210> 59
<211> 631
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(631)
<223> n = A,T,C or G

<400> 59
tggtggcatt ggttgctgga gagagaaaac ccccgcacgt tgcaggtatg cacctgacaa 60
caccacgggg gctaatcttg actctagacc actcaagaat agccgcgaaa cgttgtcatt 120
acaacacagg cggctatatg acgttcgcag agctgggcat ggccttctgg catgatttag 180
cggctccggt cattgctggc attcttgcca gtatgatcgt gaactggctg aacaagcgga 240
agtaacgtgt catgcgggcg tcaggctgcc gtaatggcaa tttgcgcccg gaccaggccg 300

caggggggaa actctgcggc ctttttcgtt cttactgcgg gtaaggcacc cagtcgccgc 360
cgttcaggcg aacgtacggt ttatcctggt attgaataac tactgcattt gagttctcgg 420
agaccggtgc tgtttgtggc aacccactgg tgagtttttt ccagtcaaca ttgtcttcgg 480
tgaaaatctt gccatcgaga acgcgaacca ccagatcgga gatagccagg aagctgctcg 540
gttgttcgat gacaatcggt gccccctgat gcggtgcctt catgccgaag aatttcaccc 600
caacggggac gtcngtgata gaccgggcta g 631

<210> 60
<211> 648
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(648)
<223> n = A,T,C or G

<400> 60
ggctcaggcn tgctgattgt ttttttgtgc aatggcccng tattagcgtc gttgctgtcg 60
atggagagaa tcataaacgt ggtgaatgat gattgttagc aaggaaaact gtcaaaaatc 120
ttcaaaaaat ttgagggata aggccggaat ggctccggcc agagggaagt taaccgcgaa 180
gctgttgctg cttgagggtc gttttaacca gacgccaggc gctccatacg ccaaaaccgc 240
gtctggccca gcggaccagc atattaggat ggcgaatcgt ccagatcgcc atcacgctac 300
tgccaaccag cgcccaggag cgcagactta gcagcatatt ccancgacga tcgtaagcgc 360
ctgttgtctc cagccattca cgacgactgg cggaagggnc cgcgnctgac caacttgnct 420
tttagnctga tncanattan attnataaac gcagnanncn ggtntgatta atcntatttn 480
gctctngtct ggtagttagc nncggnnngt ctcnttntna cccnnttcnn tttannttac 540
natnngtaan ttatntttnt nngtctnant tntanttgng tactntaagt ntatncgnnn 600
atnntnnnan nnnncagnnc ntnttttttа aatnntttnt nanncnnc 648

<210> 61
<211> 737
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(737)
<223> n = A,T,C or G

<400> 61
tgctaatatc tttctcattg agatgaaaat taaggtaagc gaggaaacac accacaccat 60
aaacggaggc aaataatgct gggtaatatg aatgttttta tggccgtact gggaataatt 120
ttattttctg gttttctggc cgcgtatttc agccacaaat gggatgacta atgaacggag 180
ataatccctc acctaaccgg ccccttgtta cagttgtgta caaggggcct gatttttatg 240
acggcgaaaa aaaaccgcca gtaaaccggc ggtgaatgct tgcatggata gatttgtgtt 300
ttgcttttac gctaacaggc attttcctgc actgataacg aatcgttgac acagtagcat 360
cagttttctc aatgaatgtt aaacggagct taaactcggt taatcacatt ttgttcgtca 420
ataaacatgc agcgatttct tccggtttgc ttaccctcat acattgcccg gtccgctctt 480
ccaatgacca catccagagg ctcttcagga aatgcgcgac tcacacctgc tgtcacggta 540
atgttgatat gcccttcaga atgtgtgatg gcatggttat cgactaactg gcaaattctg 600
acacctgcac gacatgcttc ttcatcatta gccgctttga caataatgat aaattcttcg 660
cccccgtagc gataaaccgt ttcgtaatna cgcgtccaac tgggntaagt aaagttgcca 720
gggtgccgta atcttac 737

<210> 62
<211> 648

<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(648)
<223> n = A,T,C or G

<400> 62
tgcttttgaa tatgtgctcg caatcttgag aaggaaatgg cgaccacgaa agaaaaggca 60
aaaaccgata atctgaaaga acccaagtat ttcagtataa gcattgaatg ccgaccagta 120
aactctttcg gattcaccca gaaagtgaan ccaaaatgat aatcgtatac ataagtcttt 180
cgagtggctc gttagcaaaa agtttcaaca atggagtaaa tacatccaac atatcaataa 240
ctctcaactg taaggggatt gaaatggtaa ccccagctct tcgcttgagg ggtatagccg 300
agaccaccga agccccggag gtggtgaaat aaaaccgggc acaacacgaa agggcgcatt 360
tccgatatcc ataaaagaag tcgggtcttt gtctggtaaa attaaattgg tgggaagtgc 420
gcctccgggt tgtaaatacc gactttgctg ggtgtagcct ggcggcatca agttttttc 480
tggaagttcg ctgatgtccg ccctttttaa agggaatttt ggtgatgccg gtgaatgccg 540
cttaaccccc cgtgggccca gttaaaagtc atggtaagnc ctaatnggtt tggggtggga 600
aaagccnact gnnaattggt tacctggttt gcaagtancc ctggaagg 648

<210> 63
<211> 237
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(237)
<223> n = A,T,C or G

<400> 63
ggtgtttant tacaagagat tcatctttgt ntaaancccn gataagtaat tacgcataaa 60
acaacaatga ttataatagc aaaaataaat attatcatct ttgatagatt acttgagata 120
gccagcatct tgtaaagcct ttatcgtttt tttatgctct ggattaatat aatcactaca 180
tctatctgag caatctgttg ttgatggaca tgtcaaccca tggtcattta cagccaa 237

<210> 64
<211> 427
<212> DNA
<213> E. Coli

<400> 64
gataattaga gtttgtcgtc agaaaattga cgttacccat aacaaatgaa aggccaggta 60
aatcatgcca ttagtcattg ttgctatcgg tgtaatcttg ttgttgctcc tgatgatccg 120
cttcaaaatg aacggcttca tcgctctcgt cctcgtggcg cttgctgttg gattaatgca 180
aggaatgccg ctggataaag ttattggctc catcaaagcc ggtgtcggcg ggacgctcgg 240
tagccttgcc ctgatcatgg gttttggcgc aatgctgggc aaaatgctgg cagactgcgg 300
tggcgcacaa cgtatcgcca ccacgctgat tgccaaattt ggtaaaaaac acatccagtg 360
ggcggtggta ctgaccggtt ttaccgttgg ttttgccctg ttctatgaag tgggctttgt 420
gctgatg 427

<210> 65
<211> 261
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(261)
<223> n = A,T,C or G

<400> 65
caaagaacct tcaacatgaa aaatatccat ttgtttgcaa aaaaagatta ttaggaagga 60
aattaatgca attatcgaaa attcaaaaaa tatccaaaaa tngtatactt tattccagaa 120
gagttcaata taatgtttgt cttcaatttt tcttacttca gggtaatata gattgctcat 180
tacattgtga gcttcatctt tatttaattt tctgttgact ccagctctcc gtgataacgg 240
ttttataatt agatgcttat c 261

<210> 66
<211> 98
<212> DNA
<213> E. Coli

<400> 66
agatgattgc cgggaacttg ttagcggcac gcaggcggcg gctcgcaccc ttaccctgct 60
ctttacgtac ttctgcgttg atagtaaaca tttctttc 98

<210> 67
<211> 260
<212> DNA
<213> E. Coli

<400> 67
aagcgcgaac gaagtcgatg tgctgcagct tcggtttgta cgggtgacgc tgtacgtcct 60
gagctttaac tttgatttct ttaccgtcaa caacgatggt cagaacttcg ctgtagaatt 120
cagctttagc ttgcatgttc atgactttgt cgtgatccag ctcgatagcc agcggcgctt 180
ctttgccacc gtagatgatt gccgggaact tgttagcggc acgcaggcgg cggctcgcac 240
ccttaccctg ctctttacgt 260

<210> 68
<211> 95
<212> DNA
<213> E. Coli

<400> 68
aaaaacggcg taaagaaagg ttgcaaacat gttaataaaa actcaaattg atcccacgta 60
tatattacgc cgcaaaatcc ttacaataaa caggg 95

<210> 69
<211> 174
<212> DNA
<213> E. Coli

<400> 69
ttaattatta aaatagtgta acgcgattat gtggttatgg gggtaaacat taaataaacc 60
agcggggagg ggaggtaaag tgaaaaaata aaaagcggat aatcttaata agcaggccgg 120
acagcatcgc catccggcac tgatacgagg tttatttcag ctcatcaacc atcg 174

<210> 70
<211> 138
<212> DNA
<213> E. Coli

<400> 70
agtctgtaaa aacgtcaaaa agagtgtttt atcaacagaa gaatggaggt ctgacagata 60
gtagtaatgc aaaaaaatgg agacttaagt tgaatgaacg ggagtaaagc gaaaagacta 120
tagagtgaag gagaaatt 138

<210> 71
<211> 191
<212> DNA
<213> E. Coli

<400> 71
tttgttggct taatattcta ttgttatctt tatttataga tgtttatatt gcatgaggtg 60
gtttttggag agaagaatga ggaagatgcg tcgagccaca gaaacgttag ctttacatat 120
agcggaggtg atgtgaattt aatttacaat agaaataatt tacatatcaa acagttagat 180
gctttttgtc g 191

<210> 72
<211> 244
<212> DNA
<213> E. Coli

<400> 72
ggccatttat acaggaaaag cctatgtcag aacgtaaaaa ctcaaaatca cgccgtaatt 60
atctcgttaa atgttcctgc ccaaactgca cccaagagtc agaacacagt ttttcaagag 120
tacaaaaagg tgccctttg atctgccctc attgcaacaa agtattccag acaaatctta 180
aagctgtagc ctgattgatt ttattagtaa caagtatttt ttatatttta ataatatatt 240
taaa 244

<210> 73
<211> 327
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(327)
<223> n = A,T,C or G

<400> 73
aaattttcag gtaccttgtc accatacttt tttttctgag cattaatgat attttgagct 60
tcttgaggat ctttaactcc ccacatttgg tggaaagtat tcatattaaa aggaaggntg 120
aataatttgn ctttataaat cgccagtgga gaattagtaa aacgattaaa ttctactaaa 180
tnattaaccg naaaaaaatt cccatatata tttatcattg gtatgaaaaa tatgtgcacc 240
atatttatga atntggatac cctnacagtc ctctgtgtac gcatttccac cgatatgatt 300
tcttttctna atcactaaaa cttttt 327

<210> 74
<211> 150
<212> DNA
<213> E. Coli

<400> 74
gcagtgatcg aagcgatgac gaagtgtatg gaaaaatcag aaaaactcag caaatcctga 60
tgactttcgc cggacgtcag gccgccactt cggtgcggtt acgtccggct ttctttgctt 120
tgtaaagcgc caaatctgcc gatttcaacc 150

<210> 75

<211> 330
<212> DNA
<213> E. Coli

<400> 75
gaaagtatct tcgttattga catcactgga aaatataact tgcttttcat tattaaactc 60
gaagcgcgta ccgtatctgg acaaacattt atcgagctta ccaaattcct gaagaggttt 120
aactacagat aacatttgcg cgtcctttgc agtaatgccc gtcaaatcct tgacgggcat 180
tatttagatt aaattaccag tatttcttcg gagtgaagaa tattaccagg tatatttaac 240
acccacgttc gcggaccagt cttgatctac gtcaccacca ccgaggtagt tagcatcggt 300
ataggcgctg aagttcttgg tgaagctaaa 330

<210> 76
<211> 194
<212> DNA
<213> E. Coli

<400> 76
tgtttttttc cagcaacgga gcaaaaggtt tgcccttgtg cagctcaggg ttaaccactt 60
taactacgtg gcgacgaccc ggagatgtcg gtttacattt aacaactgcc attgtattac 120
tcctccgact tactcagcgc cgccaacgaa gtccagattc tggccttctt tcagggtgac 180
gtaagctttt ttcc 194

<210> 77
<211> 188
<212> DNA
<213> E. Coli

<400> 77
tccctttaac taccagggtg ttaacgactt cgacttcgac ttcaaacagt ttctgcacag 60
cagctttgat ttctgctttg gtcgcgtctt tagcaacttt gagtactatg gtgttggatt 120
tttccatcgc agtagacgct ttttcagaaa cgtgcggtgc acgcagcacc ttcagcagac 180
gttcttca 188

<210> 78
<211> 173
<212> DNA
<213> E. Coli

<400> 78
acaaaggcga acaaagcctg tgaagcccga aggctccaca gacagtgcta cttgaaggcc 60
ttactgtttc ttcttaggag cgagcaccat gatcatctgg cggccttcga tcttggttgg 120
gaaggattcg accactgcca gttcttgcaa atcgtctttc acgcgattaa gca 173

<210> 79
<211> 272
<212> DNA
<213> E. Coli

<220>
<221> misc_feature
<222> (1)...(272)
<223> n = A,T,C or G

<400> 79
tggagaaaac gggtgattga taaagcaatc atcgttctag gggcgttaat tgcgctgctg 60
gaactgatcc cgctttctgc ttcaagcttc tgaactggat acggaaacgt aatnagggct 120

aaagaagaca ctactcttag ccctttaaca tttaacgcat tgtcacgaac tcttctgccg 180
ccgttgggtg aatggcgacg ggtattggtc gaaatctttt ttgggtggcc ccatctttaa 240
cgcccacccg cgaaaccctg caacatttcg tc 272

<210> 80
<211> 259
<212> DNA
<213> E. Coli

<400> 80
cgcaggcagc tgatggtcaa caggatgaga gaaacccaga gacaggttaa tcacattgcc 60
tttaaccgct gcacggtaac ctacaccaac cagctgcagc ttcttagtga agccttcggt 120
aacaccgata accattgagt tcagcagggc acgcgcggta ccagcctgtg cccaaccgtc 180
tgcgtaacca tcacgcggac cgaaggtcag ggtattatct gcatgtttaa cttcaacagc 240
atcgttgaga gtacgagtc 259

<210> 81
<211> 73
<212> DNA
<213> E. Coli

<400> 81
caggtcggaa cttacccgac aaggaatttc gctaccttag gaccgttata gttacggccg 60
ccgtttaccg ggg 73

<210> 82
<211> 666
<212> DNA
<213> E. Coli

<400> 82
atgaacgttt tctcgcaaac tcaacgctat aaggcgttgt tctggttatc gttatttcat 60
ctgctggtga tcacctccag taactatctg gttcagcttc ccgtctccat tttgggtttc 120
cataccacct ggggcgcgtt tagctttccg tttatttttc ttgctaccga cctgaccgtg 180
cgtatttttg gcgcaccgct ggcccgacgc attatcttcg cggtaatgat ccctgcgtta 240
ttaatctcct acgtcatctc gtcgctattc tatatgggtt cctggcaggg attcggcgca 300
ctcgcccact tcaacctgtt tgtcgcccgt atcgccaccg ccagtttcat ggcctacgcg 360
ctggggcaaa tcctcgacgt gcacgttttt aaccgcctgc gtcagagtcg ccgctggtgg 420
ctggcaccga cagcgtccac actgttcggt aacgtcagcg acacgctggc ctttttcttc 480
attgccttct ggcgtagccc ggatgccttt atggctgaac actggatgga aatcgcgctg 540
gtcgattact gtttcaaagt gttaatcagt atcgttttct tcctgccaat gtatggcgta 600
ttactcaata tgctgttgaa aagactggca gataaatccg aaatcaacgc tttgcaggcg 660
agttaa 666

<210> 83
<211> 612
<212> DNA
<213> E. Coli

<400> 83
gtgataagat ggatgaatga gccgttatgg ccgtttatcg aaaggaagaa gtcaatgcgc 60
aatctggtta aatatgtcgg aattggcctg ctggttatgg ggcttgcggc ctgtgatgat 120
aaagacacta acgctacggc gcagggttcg gtcgcggaaa gtaacgctac cgggaatccc 180
gtcaacctgc ttgatggcaa gttaagtttc tcgctgccag cggatatgac cgaccagagc 240
ggtaagctgg gaacgcaggc caataacatg catgtctggt ccgacgccac cgggcagaaa 300
gcagtcatcg tcatcatggg cgatgatccg aaagaagatc tggcggtgct ggcgaagcgt 360
ctggaagatc agcaacgtag ccgcgatccg cagctgcaag tggtaaccaa taaagccatt 420

gagctgaaag gtcacaaaat gcagcagtta gacagtatta tctccgcgaa aggccagacg 480
gcgtactctt ccgttattct gggtaacgtg ggtaatcaac tgctgaccat gcaaattacg 540
ctgcccgctg acgatcagca aaaagcgcag accaccgcag aaaacatcat taatacgctg 600
gttattcagt aa 612

<210> 84
<211> 975
<212> DNA
<213> E. Coli

<400> 84
atggcgaata tgtttgccct gattctggtg attgccacac tggtgacggg cattttatgg 60
tgcgtggata aattcttttt cgcacctaaa cggcgggaac gtcaggcagc ggcgcaggcg 120
gctgccgggg actcactgga taaagcaacg ttgaaaaagg ttgcgccgaa gcctggctgg 180
ctggaaaccg gtgcttctgt ttttccggta ctggctatcg tattgattgt gcgttcgttt 240
atttatgaac cgttccagat cccgtcaggt tcgatgatgc cgactctgtt aattggtgat 300
tttattctgg tagagaagtt tgcttatggc attaaagatc ctatctacca gaaaacgctg 360
atcgaaaccg gtcatccgaa acgcggcgat atcgtggtct ttaaatatcc ggaagatcca 420
aagcttgatt acatcaagcg cgcggtgggt ttaccgggcg ataaagtcac ttacgatccg 480
gtctcaaaag agctgacgat tcaaccggga tgcagttccg gccaggcgtg tgaaaacgcg 540
ctgccggtca cctactcaaa cgtggaaccg agcgatttcg ttcagacctt ctcacgccgt 600
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<213> E. Coli

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<211> 540
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<213> E. Coli

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<213> E. Coli

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<212> DNA
<213> E. Coli

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<213> E. Coli

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<212> DNA
<213> E. Coli

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<210> 119
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<212> DNA
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<212> DNA
<213> E. Coli

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<213> E. Coli

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<211> 2223
<212> DNA
<213> E. Coli

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<212> DNA
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<211> 636
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<211> 504
<212> DNA
<213> E. Coli

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<211> 531
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<213> E. Coli

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gtatcattac tctatgcctg tcccttaaaa acccactcat taagactgaa tccattcagc 180
aaatga 186

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<211> 1197
<212> DNA
<213> E. Coli

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<211> 291
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<213> E. Coli

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cagcaaacgc ccgctgcaca agttgacacc gcattaccca cggcgctgaa aatggttggc 240
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<211> 948
<212> DNA
<213> E. Coli

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<211> 891
<212> DNA
<213> E. Coli

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<212> DNA
<213> E. Coli

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<211> 522
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<213> E. Coli

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<210> 150
<211> 852
<212> DNA
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<211> 117
<212> DNA
<213> E. Coli

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<210> 152

<211> 1332
<212> DNA
<213> E. Coli

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<212> DNA
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<210> 154
<211> 180
<212> DNA
<213> E. Coli

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<210> 155
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<213> E. Coli

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<210> 156
<211> 354
<212> DNA
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<210> 157
<211> 534
<212> DNA
<213> E. Coli

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<211> 393
<212> DNA
<213> E. Coli

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<210> 159

<211> 306
<212> DNA
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<211> 315
<212> DNA
<213> E. Coli

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gaaactatca agtaa 315

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<211> 372
<212> DNA
<213> E. Coli

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<210> 163
<211> 567

<212> DNA
<213> E. Coli

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<211> 1284
<212> DNA
<213> E. Coli

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<211> 1434
<212> DNA
<213> E. Coli

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<211> 2841
<212> DNA
<213> E. Coli

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<213> E. Coli

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<213> E. Coli

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<212> DNA
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<212> DNA
<213> E. Coli

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<211> 483
<212> DNA
<213> E. Coli

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<211> 612
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<213> E. Coli

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<213> E. Coli

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<210> 180
<211> 4281
<212> DNA
<213> E. Coli

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<211> 369
<212> DNA
<213> E. Coli

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ggtggtgtat ttattataga aattaataag aaaaatggat gtgttttgaa tttcctacat 360
agtaaataa 369

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<211> 711
<212> DNA
<213> E. Coli

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<211> 261
<212> DNA
<213> E. Coli

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ggtgaaatta atgttacgca ttattttata acaaatattg gagctggatt gcctgatgct 180
tgtgcagagt aa 192

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<212> DNA
<213> E. Coli

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<212> DNA
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<212> DNA
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<211> 285
<212> DNA
<213> E. Coli

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<210> 193
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<212> DNA
<213> E. Coli

<400> 193

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<211> 1572
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<213> E. Coli

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<213> E. Coli

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<212> DNA
<213> E. Coli

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<211> 93
<212> DNA
<213> E. Coli

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<210> 199
<211> 603
<212> DNA
<213> E. Coli

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<212> DNA
<213> E. Coli

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<212> DNA
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<210> 203
<211> 726
<212> DNA
<213> E. Coli

<400> 203
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gcattggtgc ctccaatggg cgaaagcacg gttaaattgc cttctgatgc aggaagcaat 660
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gaataa 726

<210> 204
<211> 2637
<212> DNA
<213> E. Coli

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<210> 205
<211> 531
<212> DNA
<213> E. Coli

<400> 205

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aacattggcg cgacgactcc tgttgttcca tttcgtattt tgctgtcacc ctgtggtaat 240
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ccgggtaaac caaatacgct gaatttttac gcccggctaa tggcgacaca ggtgcctgtc 480
actgcggggc atatcaatgc cacggctacc ttcactcttg aatatcagta a 531

<210> 206
<211> 504
<212> DNA
<213> E. Coli

<400> 206

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agcatcacct atacctacag ctga 504

<210> 207
<211> 903
<212> DNA
<213> E. Coli

<400> 207

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<210> 208
<211> 1631
<212> DNA
<213> E. Coli

<400> 208

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atcaaatgta g 1631

<210> 209
<211> 534
<212> DNA
<213> E. Coli

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gcatctgctc ctcagatact tgaccagttt ctggacgaaa aagaaggtaa ccacacaatg 120
gcataccgcg atggttctgg catatggacc atctgtcggg gtgccacagt ggtggatgga 180
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tggtggatta aggatggcgg acgcgattgc cgcattcgtt caaataactg ttacggtcag 480
gttattcgtc gtgaccagga gagcgcatta acctgctggg ggatagaaca gtga 534

<210> 210
<211> 312
<212> DNA
<213> E. Coli

<400> 210
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gtccggcaag tcttcctgga agtagcagaa aaattgtcag aaaaagttga gtcttatctg 240
cagcatcagt actcctttaa gattgaaaat cctgccaata agcacgagcg tcctcatcat 300
aaatatctat ga 312

<210> 211
<211> 291
<212> DNA
<213> E. Coli

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tgggctgcaa tcggtgtgct gggtagcctg gtttttggcc tgctgacgta tctgacaaat 240
ctttatttca agattaaaga agacaggcgt aaggctgcga gaggagagta a 291

<210> 212
<211> 216
<212> DNA
<213> E. Coli

<400> 212
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atttctcctg ttgatggtag taaagatgtg tttgtgcatt tttctgcgat tcagaatgat 120
aattatcgaa ccttatttga aggtcaaaag gttaccttct ctatagagag tggtgctaaa 180
ggtcctgcag cagcaaatgt catcattact gattaa 216

<210> 213
<211> 1017
<212> DNA
<213> E. Coli

<400> 213
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gagcagattc tgccatggca aaacatggtg gaagtcatcg agccgtttta ccccaaggct 180
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<210> 214
<211> 474
<212> DNA
<213> E. Coli

<400> 214
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ttattgaaac aaatatgcca gcattatgca ggcctggact atattagtgg aggtgtatac 180

ggctttggtc ataataataa tattgcggtg gcgtatgtaa aggaaaaata tagacccgca 240
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gatgaagcga aatctttaca tgattattcc gtaagaaaat ttcctgtgct ttctgatttt 420
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<210> 215
<211> 1119
<212> DNA
<213> E. Coli

<400> 215
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<210> 216
<211> 591
<212> DNA
<213> E. Coli

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cgcaatgatg gtagcattaa ttttggtgaa aatttcacaa gtggagtcgg tctcaggctg 180
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<210> 217
<211> 993
<212> DNA
<213> E. Coli

<400> 217
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ggtggagtag tccagagaat tattagttct gttaagctta gtacatttct ctgcggtctt 180
gaaaataaag atgttttaat tttcaatttc ccgatggcca aaccattttg gcatatattg 240
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<211> 1167
<212> DNA
<213> E. Coli

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<210> 219
<211> 1104
<212> DNA
<213> E. Coli

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<211> 1116
<212> DNA
<213> E. Coli

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<212> DNA
<213> E. Coli

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<210> 222
<211> 669
<212> DNA
<213> E. Coli

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gttattttag agggagttat ctctctgcgt agagaagaaa acgtacttat cggtattacc 240
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aaaggcggct atatcgaaat gaataaaggc aaactggtcg ctatcaaccg tttgccttca 660
gagtattaa 669

<210> 223
<211> 255
<212> DNA
<213> E. Coli

<400> 223
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aaagcggttc tgtaa 255

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<211> 192
<212> DNA
<213> E. Coli

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cacctgttga agcaagtgcg tcgcgatgtc gcacgcgtta agactttact gaacgagaag 180
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<212> DNA

<213> E. Coli

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gcagcgaaac tgccgattaa aaccaccttt gtaactaaga cggtgatgta a 411

<210> 226
<211> 702
<212> DNA
<213> E. Coli

<400> 226
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gctgctcagc ctaaaaagca gcagcgtaaa ggccgtaaat aa 702

<210> 227
<211> 333
<212> DNA
<213> E. Coli

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agccacatca ctgtggttgt gtccgatcgc tga 333

<210> 228
<211> 279
<212> DNA
<213> E. Coli

<400> 228
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cgcggccacg ctgctgataa aaaagcgaag aagaaataa 279

<210> 229
<211> 822

<212> DNA
<213> E. Coli

<400> 229
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<210> 230
<211> 303
<212> DNA
<213> E. Coli

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<210> 231
<211> 630
<212> DNA
<213> E. Coli

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ctgatcgtta aaccagctgt gaaggcgtaa 630

<210> 232
<211> 606
<212> DNA
<213> E. Coli

<400> 232
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gcatga 606

<210> 233
<211> 312
<212> DNA
<213> E. Coli

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<210> 234
<211> 357
<212> DNA
<213> E. Coli

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tgcctgccgt acgcataa 198

<210> 236
<211> 543
<212> DNA
<213> E. Coli

<400> 236
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tcttctgaga accgtgaata ctgcattaag ccgatgaact gcccgggtca cgtacaaatt 1020
ttcaaccagg ggctgaagtc ttatcgcgat ctgccgctgc gtatggccga gtttggtagc 1080
tgccaccgta acgagccgtc aggttcgctg catggcctga tgcgcgtgcg tggatttacc 1140
caggatgacg cgcatatctt ctgtactgaa gaacaaattc gcgatgaagt taacggatgt 1200
atccgtttag tctatgatat gtacagcact tttggcttcg agaagatcgt cgtcaaactc 1260
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ttctacggtc cgaaaattga atttaccctg tatgactgcc tcgatcgtgc atggcagtgc 1440
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gacaatgaac gtaaagtacc ggtaatgatt caccgcgcaa ttctggggtc gatggaacgt 1560
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gtggaatcag gcaaagttgc cgttcgcacc cgccgtggta aagacctggg aagcatggac 1860
gtaaatgaag tgatcgagaa gctgcaacaa gagattcgca gccgcagtct taaacaattg 1920
gaggaataa 1929

<210> 238
<211> 1353
<212> DNA
<213> E. Coli

<400> 238
atgactaaac actatgatta catcgccatc ggcggcggca gcggcggtat cgcctccatc 60
aaccgcgcgg ctatgtacgg ccagaaatgt gcgctgattg aagccaaaga gctgggcggc 120
acctgcgtaa atgttggctg tgtgccgaaa aaagtgatgt ggcacgcggc gcaaatccgt 180

gaagcgatcc atatgtacgg cccggattat ggttttgata ccactatcaa taaattcaac 240
tgggaaacgt tgatcgccag ccgtaccgcc tatatcgacc gtattcatac ttcctatgaa 300
aacgtgctcg gtaaaaataa cgttgatgta atcaaaggct ttgcccgctt cgttgatgcc 360
aaaacgctgg aggtaaacgg cgaaaccatc acggccgatc atattctgat cgccacaggc 420
ggtcgtccga gccacccgga tattccgggc gtggaatacg gtattgattc tgatggcttc 480
ttcgcccttc ctgctttgcc agagcgcgtg gcggttgttg gcgcgggtta catcgccgtt 540
gagctggcgg gcgtgattaa cggcctcggc gcgaaaacgc atctgtttgt gcgtaaacat 600
gcgccgctgc gcagcttcga cccgatgatt tccgaaacgc tggtcgaagt gatgaacgcc 660
gaaggcccgc agctgcacac caacgccatc ccgaaagcgg tagtgaaaaa taccgatggt 720
agcctgacgc tggagctgga agatggtcgc agtgaaacgg tggattgcct gatttgggcg 780
attggtcgcg agcctgccaa tgacaacatc aacctggaag ccgctggcgt taaaactaac 840
gaaaaaggct atatcgtcgt cgataaatat caaaacacca atattgaagg tatttacgcg 900
gtgggcgata acacgggtgc agtggagctg acaccggtgg cagttgcagc gggtcgccgt 960
ctctctgaac gcctgtttaa taacaagccg gatgagcatc tggattacag caacattccg 1020
accgtggtct tcagccatcc gccgattggt actgttggtt taacggaacc gcaggcgcgc 1080
gagcagtatg gcgacgatca ggtgaaagtg tataaatcct ctttcaccgc gatgtatacc 1140
gccgtcacca ctcaccgcca gccgtgccgc atgaagctgg tgtgcgttgg atcggaagag 1200
aagattgtcg gtattcacgg cattggcttt ggtatggacg aaatgttgca gggcttcgcg 1260
gtggcgctga agatgggggc aaccaaaaaa gacttcgaca ataccgtcgc cattcaccca 1320
acggcggcag aagagttcgt gacaatgcgt taa 1353

<210> 239
<211> 2904
<212> DNA
<213> E. Coli

<400> 239
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cccggcctat caacgtcgtc gtcttcaacg ttccttcagg acccttaaag ggtcagggag 120
aactcatctc ggggcaagtt tcgtgcttag atgctttcag cacttatctc ttccgcattt 180
agctaccggg cagtgccatt ggcatgacaa cccgaacacc agtgatgcgt ccactccggt 240
cctctcgtac taggagcagc ccccctcagt tctccagcgc ccacggcaga tagggaccga 300
actgtctcac gacgttctaa acccagctcg cgtaccactt taaatggcga acagccatac 360
ccttgggacc tacttcagcc ccaggatgtg atgagccgac atcgaggtgc caaacaccgc 420
cgtcgatatg aactcttggg cggtatcagc ctgttatccc cggagtacct tttatccgtt 480
gagcgatggc ccttccattc agaaccaccg gatcactatg acctgctttc gcacctgctc 540
gcgccgtcac gctcgcagtc aagctggctt atgccattgc actaacctcc tgatgtccga 600
ccaggattag ccaaccttcg tgctcctccg ttactcttta ggaggagacc gccccagtca 660
aactacccac cagacactgt ccgcaacccg gattacgggt caacgttaga acatcaaaca 720
ttaaagggtg gtatttcaag gtcggctcca tgcagactgg cgtccacact tcaaagcctc 780
ccacctatcc tacacatcaa ggctcaatgt tcagtgtcaa gctatagtaa aggttcacgg 840
ggtctttccg tcttgccgcg ggtacactgc atcttcacag cgagttcaat ttcactgagt 900
ctcgggtgga gacagcctgg ccatcattac gccattcgtg caggtcggaa cttacccgac 960
aaggaatttc gctaccttag gaccgttata gttacggccg ccgtttaccg gggcttcgat 1020
caagagcttc gcttgcgcta accccatcaa ttaaccttcc ggcaccgggc aggcgtcaca 1080
ccgtatacgt ccactttcgt gtttgcacag tgctgtgttt ttaataaaca gttgcagcca 1140
gctggtatct tcgactgatt tcagctccat ccgcgaggga cctcacctac atatcagcgt 1200
gccttctccc gaagttacgg caccattttg cctagttcct tcacccgagt tctctcaagc 1260
gccttggtat tctctacctg accacctgtg tcggtttggg gtacgatttg atgttacctg 1320
atgcttagag gcttttcctg gaagcagggc atttgttgct tcagcaccgt agtgcctcgt 1380
catcacgcct cagccttgat tttccggatt tgcctggaaa accagcctac acgcttaaac 1440
cgggacaacc gtcgcccggc caacatagcc ttctccgtcc ccccttcgca gtaacaccaa 1500
gtacaggaat attaacctgt ttcccatcga ctacgccttt cggcctcgcc ttaggggtcg 1560
actcaccctg ccccgattaa cgttggacag gaacccttgg tcttccggcg agcgggcttt 1620
tcacccgctt tatcgttact tatgtcagca ttcgcacttc tgatacctcc agcatgcctc 1680
acagcacacc ttcgcaggct tacagaacgc tcccctaccc aacaacgcat aagcgtcgct 1740
gccgcagctt cggtgcatgg tttagccccg ttacatcttc cgcgcaggcc gactcgacca 1800

gtgagctatt acgctttctt taaatgatgg ctgcttctaa gccaacatcc tggctgtctg 1860
ggccttccca catcgtttcc cacttaacca tgactttggg accttagctg gcggtctggg 1920
ttgtttccct cttcacgacg gacgttagca cccgccgtgt gtctcccgtg ataacattct 1980
ccggtattcg cagtttgcat cgggttggta agtcgggatg acccccttgc cgaaacagtg 2040
ctctaccccc ggagatgaat tcacgaggcg ctacctaaat agctttcggg gagaaccagc 2100
tatctcccgg tttgattggc ctttcacccc cagccacaag tcatccgcta atttttcaac 2160
attagtcggt tcggtcctcc agttagtgtt acccaacctt caacctgccc atggctagat 2220
caccgggttt cgggtctata ccctgcaact taacgcccag ttaagactcg gtttcccttc 2280
ggctccccta ttcggttaac cttgctacag aatataagtc gctgacccat tatacaaaag 2340
gtacgcagtc acacgcctaa gcgtgctccc actgcttgta cgtacacggt ttcaggttct 2400
ttttcactcc cctcgccggg gttcttttcg cctttccctc acggtactgg ttcactatcg 2460
gtcagtcagg agtatttagc cttggaggat ggtcccccca tattcagaca ggataccacg 2520
tgtcccgccc tactcatcga gctcacagca tgtgcatttt tgtgtacggg gctgtcaccc 2580
tgtatcgcgc gcctttccag acgcttccac taacacacac actgattcag gctctgggct 2640
gctccccgtt cgctcgccgc tactggggga atctcggttg atttcttttc ctcggggtac 2700
ttagatgttt cagttccccc ggttcgcctc attaacctat ggattcagtt aatgatagtg 2760
tgtcgaaaca cactgggttt ccccattcgg aaatcgccgg ttataacggt tcatatcacc 2820
ttaccgacgc ttatcgcaga ttagcacgtc cttcatcgcc tctgactgcc agggcatcca 2880
ccgtgtacgc ttagtcgctt aacc 2904

<210> 240
<211> 120
<212> DNA
<213> E. Coli

<400> 240
atgcctggca gttccctact ctcgcatggg gagaccccac actaccatcg gcgctacggc 60
gtttcacttc tgagttcggc atggggtcag gtgggaccac cgcgctacgg ccgccaggca 120

<210> 241
<211> 76
<212> DNA
<213> E. Coli

<400> 241
gtcccttcg tctagaggcc caggacaccg ccctttcacg gcggtaacag gggttcgaat 60
cccctagggg acgcca 76

<210> 242
<211> 1549
<212> DNA
<213> E. Coli

<400> 242
aaattgaaga gtttgatcat ggctcagatt gaacgctggc ggcaggccta acacatgcaa 60
gtcgaacggt aacaggaagc agcttgctgc ttcgctgacg agtggcggac gggtgagtaa 120
tgtctgggaa gctgcctgat ggaggggat aactactgga aacggtagct aataccgcat 180
aatgtcgcaa gaccaaagag ggggaccttc gggcctcttg ccatcggatg tgcccagatg 240
ggattagctt gttggtgggg taacggctca ccaaggcgac gatccctagc tggtctgaga 300
ggatgaccag ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg 360
ggaatattgc acaatgggcg caagcctgat gcagccatgc cgcgtgtatg aagaaggcct 420
tcgggttgta aagtactttc agcggggagg aagggagtaa agttaatacc tttgctcatt 480
gacgttaccc gcagaagaag caccggctaa ctccgtgcca gcagccgcgg taatacggag 540
ggtgcaagcg ttaatcggaa ttactgggcg taaagcgcac gcaggcgggt tggttaagtc 600
agatgtgaaa tccccgggct caacctggga actgcatctg atactggcaa gcttgagtct 660
cgtagagggg ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac 720
cggtggcgaa ggcggccccc tggacgaaga ctgacgctca ggtgcgaaag cgtggggagc 780

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aaacaggatt agataccctg gtagtccacg ccgtaaacga tgtcgacttg gaggttgtgc     840
ccttgaggcg tggcttccgg agctaacgcg ttaagtcgac cgcctgggga gtacggccgc     900
aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa     960
ttcgatgcaa cgcgaagaac cttacctggt cttgacatcc acggaagttt tcagagatga    1020
gaatgtgcct tcgggaaccg tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg    1080
aaatgttggg ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcggtccgg    1140
ccgggaactc aaaggagact gccagtgata aactggagga aggtggggat gacgtcaagt    1200
catcatggcc cttacgacca gggctacaca cgtgctacaa tggcgcatac aaagagaagc    1260
gacctcgcga gagcaagcgg acctcataaa gtgcgtcgta gtccggattg gagtctgcaa    1320
ctcgactcca tgaagtcgga atcgctagta atcgtggatc agaatgccac ggtgaatacg    1380
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tagcttaacc ttcgggaggg cgcttaccac tttgtgattc atgactgggg tgaagtcgta    1500
acaaggtaac cgtaggggaa cctgcggttg gatcacctcc ttaccttaa                 1549
```

<210> 243
<211> 221
<212> PRT
<213> E. Coli

<400> 243

```
Met Asn Val Phe Ser Gln Thr Gln Arg Tyr Lys Ala Leu Phe Trp Leu
 1               5                  10                  15
Ser Leu Phe His Leu Leu Val Ile Thr Ser Ser Asn Tyr Leu Val Gln
            20                  25                  30
Leu Pro Val Ser Ile Leu Gly Phe His Thr Thr Trp Gly Ala Phe Ser
        35                  40                  45
Phe Pro Phe Ile Phe Leu Ala Thr Asp Leu Thr Val Arg Ile Phe Gly
    50                  55                  60
Ala Pro Leu Ala Arg Arg Ile Ile Phe Ala Val Met Ile Pro Ala Leu
65                  70                  75                  80
Leu Ile Ser Tyr Val Ile Ser Ser Leu Phe Tyr Met Gly Ser Trp Gln
                85                  90                  95
Gly Phe Gly Ala Leu Ala His Phe Asn Leu Phe Val Ala Arg Ile Ala
            100                 105                 110
Thr Ala Ser Phe Met Ala Tyr Ala Leu Gly Gln Ile Leu Asp Val His
        115                 120                 125
Val Phe Asn Arg Leu Arg Gln Ser Arg Arg Trp Trp Leu Ala Pro Thr
    130                 135                 140
Ala Ser Thr Leu Phe Gly Asn Val Ser Asp Thr Leu Ala Phe Phe Phe
145                 150                 155                 160
Ile Ala Phe Trp Arg Ser Pro Asp Ala Phe Met Ala Glu His Trp Met
                165                 170                 175
Glu Ile Ala Leu Val Asp Tyr Cys Phe Lys Val Leu Ile Ser Ile Val
            180                 185                 190
Phe Phe Leu Pro Met Tyr Gly Val Leu Leu Asn Met Leu Leu Lys Arg
        195                 200                 205
Leu Ala Asp Lys Ser Glu Ile Asn Ala Leu Gln Ala Ser
    210                 215                 220
```

<210> 244
<211> 203
<212> PRT
<213> E. Coli

<400> 244

```
Met Ile Arg Trp Met Asn Glu Pro Leu Trp Pro Phe Ile Glu Arg Lys
 1               5                  10                  15
Lys Ser Met Arg Asn Leu Val Lys Tyr Val Gly Ile Gly Leu Leu Val
            20                  25                  30
Met Gly Leu Ala Ala Cys Asp Asp Lys Asp Thr Asn Ala Thr Ala Gln
        35                  40                  45
Gly Ser Val Ala Glu Ser Asn Ala Thr Gly Asn Pro Val Asn Leu Leu
    50                  55                  60
Asp Gly Lys Leu Ser Phe Ser Leu Pro Ala Asp Met Thr Asp Gln Ser
65                  70                  75                  80
Gly Lys Leu Gly Thr Gln Ala Asn Asn Met His Val Trp Ser Asp Ala
                85                  90                  95
Thr Gly Gln Lys Ala Val Ile Val Ile Met Gly Asp Asp Pro Lys Glu
            100                 105                 110
Asp Leu Ala Val Leu Ala Lys Arg Leu Glu Asp Gln Gln Arg Ser Arg
        115                 120                 125
Asp Pro Gln Leu Gln Val Val Thr Asn Lys Ala Ile Glu Leu Lys Gly
    130                 135                 140
His Lys Met Gln Gln Leu Asp Ser Ile Ile Ser Ala Lys Gly Gln Thr
145                 150                 155                 160
Ala Tyr Ser Ser Val Ile Leu Gly Asn Val Gly Asn Gln Leu Leu Thr
                165                 170                 175
Met Gln Ile Thr Leu Pro Ala Asp Asp Gln Gln Lys Ala Gln Thr Thr
            180                 185                 190
Ala Glu Asn Ile Ile Asn Thr Leu Val Ile Gln
        195                 200
```

<210> 245
<211> 324
<212> PRT
<213> E. Coli

<400> 245

```
Met Ala Asn Met Phe Ala Leu Ile Leu Val Ile Ala Thr Leu Val Thr
 1               5                  10                  15
Gly Ile Leu Trp Cys Val Asp Lys Phe Phe Phe Ala Pro Lys Arg Arg
            20                  25                  30
Glu Arg Gln Ala Ala Ala Gln Ala Ala Ala Gly Asp Ser Leu Asp Lys
        35                  40                  45
Ala Thr Leu Lys Lys Val Ala Pro Lys Pro Gly Trp Leu Glu Thr Gly
    50                  55                  60
Ala Ser Val Phe Pro Val Leu Ala Ile Val Leu Ile Val Arg Ser Phe
65                  70                  75                  80
Ile Tyr Glu Pro Phe Gln Ile Pro Ser Gly Ser Met Met Pro Thr Leu
                85                  90                  95
Leu Ile Gly Asp Phe Ile Leu Val Glu Lys Phe Ala Tyr Gly Ile Lys
            100                 105                 110
Asp Pro Ile Tyr Gln Lys Thr Leu Ile Glu Thr Gly His Pro Lys Arg
        115                 120                 125
Gly Asp Ile Val Val Phe Lys Tyr Pro Glu Asp Pro Lys Leu Asp Tyr
    130                 135                 140
Ile Lys Arg Ala Val Gly Leu Pro Gly Asp Lys Val Thr Tyr Asp Pro
145                 150                 155                 160
Val Ser Lys Glu Leu Thr Ile Gln Pro Gly Cys Ser Ser Gly Gln Ala
                165                 170                 175
Cys Glu Asn Ala Leu Pro Val Thr Tyr Ser Asn Val Glu Pro Ser Asp
```

```
            180                 185                 190
Phe Val Gln Thr Phe Ser Arg Arg Asn Gly Gly Glu Ala Thr Ser Gly
        195                 200                 205
Phe Phe Glu Val Pro Lys Asn Glu Thr Lys Glu Asn Gly Ile Arg Leu
    210                 215                 220
Ser Glu Arg Lys Glu Thr Leu Gly Asp Val Thr His Arg Ile Leu Thr
225                 230                 235                 240
Val Pro Ile Ala Gln Asp Gln Val Gly Met Tyr Tyr Gln Gln Pro Gly
                245                 250                 255
Gln Gln Leu Ala Thr Trp Ile Val Pro Pro Gly Gln Tyr Phe Met Met
            260                 265                 270
Gly Asp Asn Arg Asp Asn Ser Ala Asp Ser Arg Tyr Trp Gly Phe Val
        275                 280                 285
Pro Glu Ala Asn Leu Val Gly Arg Ala Thr Ala Ile Trp Met Ser Phe
    290                 295                 300
Asp Lys Gln Glu Gly Glu Trp Pro Thr Gly Leu Arg Leu Ser Arg Ile
305                 310                 315                 320
Gly Gly Ile His
```


<210> 246
<211> 586
<212> PRT
<213> E. Coli

<400> 246

```
Met Thr Ile Thr Lys Leu Ala Trp Arg Asp Leu Val Pro Asp Thr Asp
 1               5                  10                  15
Ser Tyr Gln Glu Ile Phe Ala Gln Pro His Leu Ile Asp Glu Asn Asp
            20                  25                  30
Pro Leu Phe Ser Asp Thr Gln Pro Arg Leu Gln Phe Ala Leu Glu Gln
        35                  40                  45
Leu Leu His Thr Arg Ala Ser Ser Ser Phe Met Leu Ala Lys Ala Pro
    50                  55                  60
Glu Glu Ser Glu Tyr Leu Asn Leu Ile Ala Asn Ala Ala Arg Thr Leu
65                  70                  75                  80
Gln Ser Asp Ala Gly Gln Leu Val Gly Gly His Tyr Glu Val Ser Gly
                85                  90                  95
His Ser Ile Arg Leu Arg His Ala Val Ser Ala Asp Asp Asn Phe Ala
            100                 105                 110
Thr Leu Thr Gln Val Val Ala Ala Asp Trp Val Glu Ala Glu Gln Leu
        115                 120                 125
Phe Gly Cys Leu Arg Gln Phe Asn Gly Asp Ile Thr Leu Gln Pro Gly
    130                 135                 140
Leu Val His Gln Ala Asn Gly Gly Ile Leu Ile Ile Ser Leu Arg Thr
145                 150                 155                 160
Leu Leu Ala Gln Pro Leu Leu Trp Met Arg Leu Lys Asn Ile Val Asn
                165                 170                 175
Arg Glu Arg Phe Asp Trp Val Ala Phe Asp Glu Ser Arg Pro Leu Pro
            180                 185                 190
Val Ser Val Pro Ser Met Pro Leu Lys Leu Lys Val Ile Leu Val Gly
        195                 200                 205
Glu Arg Glu Ser Leu Ala Asp Phe Gln Glu Met Glu Pro Glu Leu Ser
    210                 215                 220
Glu Gln Ala Ile Tyr Ser Glu Phe Glu Asp Thr Leu Gln Ile Val Asp
```

```
225                 230                 235                 240
Ala Glu Ser Val Thr Gln Trp Cys Arg Trp Val Thr Phe Thr Ala Arg
                245                 250                 255
His Asn His Leu Pro Ala Pro Gly Ala Asp Ala Trp Pro Ile Leu Ile
            260                 265                 270
Arg Glu Ala Ala Arg Tyr Thr Gly Glu Gln Glu Thr Leu Pro Leu Ser
        275                 280                 285
Pro Gln Trp Ile Leu Arg Gln Cys Lys Glu Val Ala Ser Leu Cys Asp
    290                 295                 300
Gly Asp Thr Phe Ser Gly Glu Gln Leu Asn Leu Met Leu Gln Gln Arg
305                 310                 315                 320
Glu Trp Arg Glu Gly Phe Leu Ala Glu Arg Met Gln Asp Glu Ile Leu
                325                 330                 335
Gln Glu Gln Ile Leu Ile Glu Thr Glu Gly Glu Arg Ile Gly Gln Ile
            340                 345                 350
Asn Ala Leu Ser Val Ile Glu Phe Pro Gly His Pro Arg Ala Phe Gly
        355                 360                 365
Glu Pro Ser Arg Ile Ser Cys Val Val His Ile Gly Asp Gly Glu Phe
    370                 375                 380
Thr Asp Ile Glu Arg Lys Ala Glu Leu Gly Gly Asn Ile His Ala Lys
385                 390                 395                 400
Gly Met Met Ile Met Gln Ala Phe Leu Met Ser Glu Leu Gln Leu Glu
                405                 410                 415
Gln Gln Ile Pro Phe Ser Ala Ser Leu Thr Phe Glu Gln Ser Tyr Ser
            420                 425                 430
Glu Val Asp Gly Asp Ser Ala Ser Met Ala Glu Leu Cys Ala Leu Ile
        435                 440                 445
Ser Ala Leu Ala Asp Val Pro Val Asn Gln Ser Ile Ala Ile Thr Gly
    450                 455                 460
Ser Val Asp Gln Phe Gly Arg Ala Gln Pro Val Gly Gly Leu Asn Glu
465                 470                 475                 480
Lys Ile Glu Gly Phe Phe Ala Ile Cys Gln Gln Arg Glu Leu Thr Gly
                485                 490                 495
Lys Gln Gly Val Ile Ile Pro Thr Ala Asn Val Arg His Leu Ser Leu
            500                 505                 510
His Ser Glu Leu Val Lys Ala Val Glu Glu Gly Lys Phe Thr Ile Trp
        515                 520                 525
Ala Val Asp Asp Val Thr Asp Ala Leu Pro Leu Leu Leu Asn Leu Val
    530                 535                 540
Trp Asp Gly Glu Gly Gln Thr Thr Leu Met Gln Thr Ile Gln Glu Arg
545                 550                 555                 560
Ile Ala Gln Ala Ser Gln Gln Glu Gly Arg His Arg Phe Pro Trp Pro
                565                 570                 575
Leu Arg Trp Leu Asn Trp Phe Ile Pro Asn
            580                 585
```

<210> 247
<211> 394
<212> PRT
<213> E. Coli

<400> 247

```
Met Ser Lys Glu Lys Phe Glu Arg Thr Lys Pro His Val Asn Val Gly
 1               5                  10                  15
Thr Ile Gly His Val Asp His Gly Lys Thr Thr Leu Thr Ala Ala Ile
            20                  25                  30
```

```
Thr Thr Val Leu Ala Lys Thr Tyr Gly Gly Ala Ala Arg Ala Phe Asp
      35                  40                  45
Gln Ile Asp Asn Ala Pro Glu Glu Lys Ala Arg Gly Ile Thr Ile Asn
    50                  55                  60
Thr Ser His Val Glu Tyr Asp Thr Pro Thr Arg His Tyr Ala His Val
65                  70                  75                  80
Asp Cys Pro Gly His Ala Asp Tyr Val Lys Asn Met Ile Thr Gly Ala
                85                  90                  95
Ala Gln Met Asp Gly Ala Ile Leu Val Val Ala Ala Thr Asp Gly Pro
            100                 105                 110
Met Pro Gln Thr Arg Glu His Ile Leu Leu Gly Arg Gln Val Gly Val
        115                 120                 125
Pro Tyr Ile Ile Val Phe Leu Asn Lys Cys Asp Met Val Asp Asp Glu
    130                 135                 140
Glu Leu Leu Glu Leu Val Glu Met Glu Val Arg Glu Leu Leu Ser Gln
145                 150                 155                 160
Tyr Asp Phe Pro Gly Asp Asp Thr Pro Ile Val Arg Gly Ser Ala Leu
                165                 170                 175
Lys Ala Leu Glu Gly Asp Ala Glu Trp Glu Ala Lys Ile Leu Glu Leu
            180                 185                 190
Ala Gly Phe Leu Asp Ser Tyr Ile Pro Glu Pro Glu Arg Ala Ile Asp
        195                 200                 205
Lys Pro Phe Leu Leu Pro Ile Glu Asp Val Phe Ser Ile Ser Gly Arg
    210                 215                 220
Gly Thr Val Val Thr Gly Arg Val Glu Arg Gly Ile Ile Lys Val Gly
225                 230                 235                 240
Glu Glu Val Glu Ile Val Gly Ile Lys Glu Thr Gln Lys Ser Thr Cys
                245                 250                 255
Thr Gly Val Glu Met Phe Arg Lys Leu Leu Asp Glu Gly Arg Ala Gly
            260                 265                 270
Glu Asn Val Gly Val Leu Leu Arg Gly Ile Lys Arg Glu Glu Ile Glu
        275                 280                 285
Arg Gly Gln Val Leu Ala Lys Pro Gly Thr Ile Lys Pro His Thr Lys
    290                 295                 300
Phe Glu Ser Glu Val Tyr Ile Leu Ser Lys Asp Glu Gly Gly Arg His
305                 310                 315                 320
Thr Pro Phe Phe Lys Gly Tyr Arg Pro Gln Phe Tyr Phe Arg Thr Thr
                325                 330                 335
Asp Val Thr Gly Thr Ile Glu Leu Pro Glu Gly Val Glu Met Val Met
            340                 345                 350
Pro Gly Asp Asn Ile Lys Met Val Val Thr Leu Ile His Pro Ile Ala
        355                 360                 365
Met Asp Asp Gly Leu Arg Phe Ala Ile Arg Glu Gly Gly Arg Thr Val
    370                 375                 380
Gly Ala Gly Val Val Ala Lys Val Leu Gly
385                 390
```

<210> 248
<211> 704
<212> PRT
<213> E. Coli

<400> 248

```
Met Ala Arg Thr Thr Pro Ile Ala Arg Tyr Arg Asn Ile Gly Ile Ser
 1               5                  10                  15
```

Ala His Ile Asp Ala Gly Lys Thr Thr Thr Thr Glu Arg Ile Leu Phe
20 25 30
Tyr Thr Gly Val Asn His Lys Ile Gly Glu Val His Asp Gly Ala Ala
35 40 45
Thr Met Asp Trp Met Glu Gln Glu Gln Glu Arg Gly Ile Thr Ile Thr
50 55 60
Ser Ala Ala Thr Thr Ala Phe Trp Ser Gly Met Ala Lys Gln Tyr Glu
65 70 75 80
Pro His Arg Ile Asn Ile Ile Asp Thr Pro Gly His Val Asp Phe Thr
85 90 95
Ile Glu Val Glu Arg Ser Met Arg Val Leu Asp Gly Ala Val Met Val
100 105 110
Tyr Cys Ala Val Gly Gly Val Gln Pro Gln Ser Glu Thr Val Trp Arg
115 120 125
Gln Ala Asn Lys Tyr Lys Val Pro Arg Ile Ala Phe Val Asn Lys Met
130 135 140
Asp Arg Met Gly Ala Asn Phe Leu Lys Val Val Asn Gln Ile Lys Thr
145 150 155 160
Arg Leu Gly Ala Asn Pro Val Pro Leu Gln Leu Ala Ile Gly Ala Glu
165 170 175
Glu His Phe Thr Gly Val Val Asp Leu Val Lys Met Lys Ala Ile Asn
180 185 190
Trp Asn Asp Ala Asp Gln Gly Val Thr Phe Glu Tyr Glu Asp Ile Pro
195 200 205
Ala Asp Met Val Glu Leu Ala Asn Glu Trp His Gln Asn Leu Ile Glu
210 215 220
Ser Ala Ala Glu Ala Ser Glu Glu Leu Met Glu Lys Tyr Leu Gly Gly
225 230 235 240
Glu Glu Leu Thr Glu Ala Glu Ile Lys Gly Ala Leu Arg Gln Arg Val
245 250 255
Leu Asn Asn Glu Ile Ile Leu Val Thr Cys Gly Ser Ala Phe Lys Asn
260 265 270
Lys Gly Val Gln Ala Met Leu Asp Ala Val Ile Asp Tyr Leu Pro Ser
275 280 285
Pro Val Asp Val Pro Ala Ile Asn Gly Ile Leu Asp Asp Gly Lys Asp
290 295 300
Thr Pro Ala Glu Arg His Ala Ser Asp Asp Glu Pro Phe Ser Ala Leu
305 310 315 320
Ala Phe Lys Ile Ala Thr Asp Pro Phe Val Gly Asn Leu Thr Phe Phe
325 330 335
Arg Val Tyr Ser Gly Val Val Asn Ser Gly Asp Thr Val Leu Asn Ser
340 345 350
Val Lys Ala Ala Arg Glu Arg Phe Gly Arg Ile Val Gln Met His Ala
355 360 365
Asn Lys Arg Glu Glu Ile Lys Glu Val Arg Ala Gly Asp Ile Ala Ala
370 375 380
Ala Ile Gly Leu Lys Asp Val Thr Thr Gly Asp Thr Leu Cys Asp Pro
385 390 395 400
Asp Ala Pro Ile Ile Leu Glu Arg Met Glu Phe Pro Glu Pro Val Ile
405 410 415
Ser Ile Ala Val Glu Pro Lys Thr Lys Ala Asp Gln Glu Lys Met Gly
420 425 430
Leu Ala Leu Gly Arg Leu Ala Lys Glu Asp Pro Ser Phe Arg Val Trp
435 440 445
Thr Asp Glu Glu Ser Asn Gln Thr Ile Ile Ala Gly Met Gly Glu Leu
450 455 460
His Leu Asp Ile Ile Val Asp Arg Met Lys Arg Glu Phe Asn Val Glu

```
465                 470                 475                 480
Ala Asn Val Gly Lys Pro Gln Val Ala Tyr Arg Glu Thr Ile Arg Gln
                485                 490                 495
Lys Val Thr Asp Val Glu Gly Lys His Ala Lys Gln Ser Gly Gly Arg
            500                 505                 510
Gly Gln Tyr Gly His Val Val Ile Asp Met Tyr Pro Leu Glu Pro Gly
        515                 520                 525
Ser Asn Pro Lys Gly Tyr Glu Phe Ile Asn Asp Ile Lys Gly Gly Val
    530                 535                 540
Ile Pro Gly Glu Tyr Ile Pro Ala Val Asp Lys Gly Ile Gln Glu Gln
545                 550                 555                 560
Leu Lys Ala Gly Pro Leu Ala Gly Tyr Pro Val Val Asp Met Gly Ile
                565                 570                 575
Arg Leu His Phe Gly Ser Tyr His Asp Val Asp Ser Ser Glu Leu Ala
            580                 585                 590
Phe Lys Leu Ala Ala Ser Ile Ala Phe Lys Glu Gly Phe Lys Lys Ala
        595                 600                 605
Lys Pro Val Leu Leu Glu Pro Ile Met Lys Val Glu Val Glu Thr Pro
    610                 615                 620
Glu Glu Asn Thr Gly Asp Val Ile Gly Asp Leu Ser Arg Arg Arg Gly
625                 630                 635                 640
Met Leu Lys Gly Gln Glu Ser Glu Val Thr Gly Val Lys Ile His Ala
                645                 650                 655
Glu Val Pro Leu Ser Glu Met Phe Gly Tyr Ala Thr Gln Leu Arg Ser
            660                 665                 670
Leu Thr Lys Gly Arg Ala Ser Tyr Thr Met Glu Phe Leu Lys Tyr Asp
        675                 680                 685
Glu Ala Pro Ser Asn Val Ala Gln Ala Val Ile Glu Ala Arg Gly Lys
    690                 695                 700
```

<210> 249
<211> 179
<212> PRT
<213> E. Coli

<400> 249

```
Met Pro Arg Arg Arg Val Ile Gly Gln Arg Lys Ile Leu Pro Asp Pro
 1               5                  10                  15
Lys Phe Gly Ser Glu Leu Leu Ala Lys Phe Val Asn Ile Leu Met Val
            20                  25                  30
Asp Gly Lys Lys Ser Thr Ala Glu Ser Ile Val Tyr Ser Ala Leu Glu
        35                  40                  45
Thr Leu Ala Gln Arg Ser Gly Lys Ser Glu Leu Glu Ala Phe Glu Val
    50                  55                  60
Ala Leu Glu Asn Val Arg Pro Thr Val Glu Val Lys Ser Arg Arg Val
65                  70                  75                  80
Gly Gly Ser Thr Tyr Gln Val Pro Val Glu Val Arg Pro Val Arg Arg
                85                  90                  95
Asn Ala Leu Ala Met Arg Trp Ile Val Glu Ala Ala Arg Lys Arg Gly
            100                 105                 110
Asp Lys Ser Met Ala Leu Arg Leu Ala Asn Glu Leu Ser Asp Ala Ala
        115                 120                 125
Glu Asn Lys Gly Thr Ala Val Lys Lys Arg Glu Asp Val His Arg Met
    130                 135                 140
Ala Glu Ala Asn Lys Ala Phe Ala His Tyr Arg Trp Leu Ser Leu Arg
145                 150                 155                 160
```

Ser Phe Ser His Gln Ala Gly Ala Ser Ser Lys Gln Pro Ala Leu Gly
165 170 175
Tyr Leu Asn

<210> 250
<211> 124
<212> PRT
<213> E. Coli

<400> 250
Met Ala Thr Val Asn Gln Leu Val Arg Lys Pro Arg Ala Arg Lys Val
1 5 10 15
Ala Lys Ser Asn Val Pro Ala Leu Glu Ala Cys Pro Gln Lys Arg Gly
20 25 30
Val Cys Thr Arg Val Tyr Thr Thr Thr Pro Lys Lys Pro Asn Ser Ala
35 40 45
Leu Arg Lys Val Cys Arg Val Arg Leu Thr Asn Gly Phe Glu Val Thr
50 55 60
Ser Tyr Ile Gly Gly Glu Gly His Asn Leu Gln Glu His Ser Val Ile
65 70 75 80
Leu Ile Arg Gly Gly Arg Val Lys Asp Leu Pro Gly Val Arg Tyr His
85 90 95
Thr Val Arg Gly Ala Leu Asp Cys Ser Gly Val Lys Asp Arg Lys Gln
100 105 110
Ala Arg Ser Lys Tyr Gly Val Lys Arg Pro Lys Ala
115 120

<210> 251
<211> 165
<212> PRT
<213> E. Coli

<400> 251
Met Ala Leu Asn Leu Gln Asp Lys Gln Ala Ile Val Ala Glu Val Ser
1 5 10 15
Glu Val Ala Lys Gly Ala Leu Ser Ala Val Val Ala Asp Ser Arg Gly
20 25 30
Val Thr Val Asp Lys Met Thr Glu Leu Arg Lys Ala Gly Arg Glu Ala
35 40 45
Gly Val Tyr Met Arg Val Val Arg Asn Thr Leu Leu Arg Arg Ala Val
50 55 60
Glu Gly Thr Pro Phe Glu Cys Leu Lys Asp Ala Phe Val Gly Pro Thr
65 70 75 80
Leu Ile Ala Tyr Ser Met Glu His Pro Gly Ala Ala Ala Arg Leu Phe
85 90 95
Lys Glu Phe Ala Lys Ala Asn Ala Lys Phe Glu Val Lys Ala Ala Ala
100 105 110
Phe Glu Gly Glu Leu Ile Pro Ala Ser Gln Ile Asp Arg Leu Ala Thr
115 120 125
Leu Pro Thr Tyr Glu Glu Ala Ile Ala Arg Leu Met Ala Thr Met Lys
130 135 140
Glu Ala Ser Ala Gly Lys Leu Val Arg Thr Leu Ala Ala Val Arg Asp
145 150 155 160
Ala Lys Glu Ala Ala

<210> 252
<211> 121
<212> PRT
<213> E. Coli

<400> 252

```
Met Ser Ile Thr Lys Asp Gln Ile Ile Glu Ala Val Ala Ala Met Ser
 1               5                  10                  15
Val Met Asp Val Val Glu Leu Ile Ser Ala Met Glu Glu Lys Phe Gly
            20                  25                  30
Val Ser Ala Ala Ala Ala Val Ala Val Ala Ala Gly Pro Val Glu Ala
        35                  40                  45
Ala Glu Glu Lys Thr Glu Phe Asp Val Ile Leu Lys Ala Ala Gly Ala
    50                  55                  60
Asn Lys Val Ala Val Ile Lys Ala Val Arg Gly Ala Thr Gly Leu Gly
65                  70                  75                  80
Leu Lys Glu Ala Lys Asp Leu Val Glu Ser Ala Pro Ala Ala Leu Lys
                85                  90                  95
Glu Gly Val Ser Lys Asp Asp Ala Glu Ala Leu Lys Lys Ala Leu Glu
            100                 105                 110
Glu Ala Gly Ala Glu Val Glu Val Lys
        115                 120
```

<210> 253
<211> 714
<212> PRT
<213> E. Coli

<400> 253

```
Met Ser Arg Ile Ile Met Leu Ile Pro Thr Gly Thr Ser Val Gly Leu
 1               5                  10                  15
Thr Ser Val Ser Leu Gly Val Ile Arg Ala Met Glu Arg Lys Gly Val
            20                  25                  30
Arg Leu Ser Val Phe Lys Pro Ile Ala Gln Pro Arg Thr Gly Gly Asp
        35                  40                  45
Ala Pro Asp Gln Thr Thr Thr Ile Val Arg Ala Asn Ser Ser Thr Thr
    50                  55                  60
Thr Ala Ala Glu Pro Leu Lys Met Ser Tyr Val Glu Gly Leu Leu Ser
65                  70                  75                  80
Ser Asn Gln Lys Asp Val Leu Met Glu Glu Ile Val Ala Asn Tyr His
                85                  90                  95
Ala Asn Thr Lys Asp Ala Glu Val Val Leu Val Glu Gly Leu Val Pro
            100                 105                 110
Thr Arg Lys His Gln Phe Ala Gln Ser Leu Asn Tyr Glu Ile Ala Lys
        115                 120                 125
Thr Leu Asn Ala Glu Ile Val Phe Val Met Ser Gln Gly Thr Asp Thr
    130                 135                 140
Pro Glu Gln Leu Lys Glu Arg Ile Glu Leu Thr Arg Asn Ser Phe Gly
145                 150                 155                 160
Gly Ala Lys Asn Thr Asn Ile Thr Gly Val Ile Val Asn Lys Leu Asn
                165                 170                 175
Ala Pro Val Asp Glu Gln Gly Arg Thr Arg Pro Asp Leu Ser Glu Ile
            180                 185                 190
```

```
Phe Asp Asp Ser Ser Lys Ala Lys Val Asn Asn Val Asp Pro Ala Lys
        195                 200                 205
Leu Gln Glu Ser Ser Pro Leu Pro Val Leu Gly Ala Val Pro Trp Ser
    210                 215                 220
Phe Asp Leu Ile Ala Thr Arg Ala Ile Asp Met Ala Arg His Leu Asn
225                 230                 235                 240
Ala Thr Ile Ile Asn Glu Gly Asp Ile Asn Thr Arg Arg Val Lys Ser
                245                 250                 255
Val Thr Phe Cys Ala Arg Ser Ile Pro His Met Leu Glu His Phe Arg
            260                 265                 270
Ala Gly Ser Leu Leu Val Thr Ser Ala Asp Arg Pro Asp Val Leu Val
        275                 280                 285
Ala Ala Cys Leu Ala Ala Met Asn Gly Val Glu Ile Gly Ala Leu Leu
    290                 295                 300
Leu Thr Gly Gly Tyr Glu Met Asp Ala Arg Ile Ser Lys Leu Cys Glu
305                 310                 315                 320
Arg Ala Phe Ala Thr Gly Leu Pro Val Phe Met Val Asn Thr Asn Thr
                325                 330                 335
Trp Gln Thr Ser Leu Ser Leu Gln Ser Phe Asn Leu Glu Val Pro Val
            340                 345                 350
Asp Asp His Glu Arg Ile Glu Lys Val Gln Glu Tyr Val Ala Asn Tyr
        355                 360                 365
Ile Asn Ala Asp Trp Ile Glu Ser Leu Thr Ala Thr Ser Glu Arg Ser
    370                 375                 380
Arg Arg Leu Ser Pro Pro Ala Phe Arg Tyr Gln Leu Thr Glu Leu Ala
385                 390                 395                 400
Arg Lys Ala Gly Lys Arg Ile Val Leu Pro Glu Gly Asp Glu Pro Arg
                405                 410                 415
Thr Val Lys Ala Ala Ala Ile Cys Ala Glu Arg Gly Ile Ala Thr Cys
            420                 425                 430
Val Leu Leu Gly Asn Pro Ala Glu Ile Asn Arg Val Ala Ala Ser Gln
        435                 440                 445
Gly Val Glu Leu Gly Ala Gly Ile Glu Ile Val Asp Pro Glu Val Val
    450                 455                 460
Arg Glu Ser Tyr Val Gly Arg Leu Val Glu Leu Arg Lys Asn Lys Gly
465                 470                 475                 480
Met Thr Glu Thr Val Ala Arg Glu Gln Leu Glu Asp Asn Val Val Leu
                485                 490                 495
Gly Thr Leu Met Leu Glu Gln Asp Glu Val Asp Gly Leu Val Ser Gly
            500                 505                 510
Ala Val His Thr Thr Ala Asn Thr Ile Arg Pro Pro Leu Gln Leu Ile
        515                 520                 525
Lys Thr Ala Pro Gly Ser Ser Leu Val Ser Ser Val Phe Phe Met Leu
    530                 535                 540
Leu Pro Glu Gln Val Tyr Val Tyr Gly Asp Cys Ala Ile Asn Pro Asp
545                 550                 555                 560
Pro Thr Ala Glu Gln Leu Ala Glu Ile Ala Ile Gln Ser Ala Asp Ser
                565                 570                 575
Ala Ala Ala Phe Gly Ile Glu Pro Arg Val Ala Met Leu Ser Tyr Ser
            580                 585                 590
Thr Gly Thr Ser Gly Ala Gly Ser Asp Val Glu Lys Val Arg Glu Ala
        595                 600                 605
Thr Arg Leu Ala Gln Glu Lys Arg Pro Asp Leu Met Ile Asp Gly Pro
    610                 615                 620
Leu Gln Tyr Asp Ala Ala Val Met Ala Asp Val Ala Lys Ser Lys Ala
625                 630                 635                 640
Pro Asn Ser Pro Val Ala Gly Arg Ala Thr Val Phe Ile Phe Pro Asp
```

645 650 655
Leu Asn Thr Gly Asn Thr Thr Tyr Lys Ala Val Gln Arg Ser Ala Asp
660 665 670
Leu Ile Ser Ile Gly Pro Met Leu Gln Gly Met Arg Lys Pro Val Asn
675 680 685
Asp Leu Ser Arg Gly Ala Leu Val Asp Asp Ile Val Tyr Thr Ile Ala
690 695 700
Leu Thr Ala Ile Gln Ser Ala Gln Gln Gln
705 710

<210> 254
<211> 588
<212> PRT
<213> E. Coli

<400> 254
Met Asn Asn Ser Ile Asn His Lys Phe His His Ile Ser Arg Ala Glu
1 5 10 15
Tyr Gln Glu Leu Leu Ala Val Ser Arg Gly Asp Ala Val Ala Asp Tyr
20 25 30
Ile Ile Asp Asn Val Ser Ile Leu Asp Leu Ile Asn Gly Gly Glu Ile
35 40 45
Ser Gly Pro Ile Val Ile Lys Gly Arg Tyr Ile Ala Gly Val Gly Ala
50 55 60
Glu Tyr Thr Asp Ala Pro Ala Leu Gln Arg Ile Asp Ala Arg Gly Ala
65 70 75 80
Thr Ala Val Pro Gly Phe Ile Asp Ala His Leu His Ile Glu Ser Ser
85 90 95
Met Met Thr Pro Val Thr Phe Glu Thr Ala Thr Leu Pro Arg Gly Leu
100 105 110
Thr Thr Val Ile Cys Asp Pro His Glu Ile Val Asn Val Met Gly Glu
115 120 125
Ala Gly Phe Ala Trp Phe Ala Arg Cys Ala Glu Gln Ala Arg Gln Asn
130 135 140
Gln Tyr Leu Gln Val Ser Ser Cys Val Pro Ala Leu Glu Gly Cys Asp
145 150 155 160
Val Asn Gly Ala Ser Phe Thr Leu Glu Gln Met Leu Ala Trp Arg Asp
165 170 175
His Pro Gln Val Thr Gly Leu Ala Glu Met Met Asp Tyr Pro Gly Val
180 185 190
Ile Ser Gly Gln Asn Ala Leu Leu Asp Lys Leu Asp Ala Phe Arg His
195 200 205
Leu Thr Leu Asp Gly His Cys Pro Gly Leu Gly Gly Lys Glu Leu Asn
210 215 220
Ala Tyr Ile Thr Ala Gly Ile Glu Asn Cys His Glu Ser Tyr Gln Leu
225 230 235 240
Glu Glu Gly Arg Arg Lys Leu Gln Leu Gly Met Ser Leu Met Ile Arg
245 250 255
Glu Gly Ser Ala Ala Arg Asn Leu Asn Ala Leu Ala Pro Leu Ile Asn
260 265 270
Glu Phe Asn Ser Pro Gln Cys Met Leu Cys Thr Asp Asp Arg Asn Pro
275 280 285
Trp Glu Ile Ala His Glu Gly His Ile Asp Ala Leu Ile Arg Arg Leu
290 295 300
Ile Glu Gln His Asn Val Pro Leu His Val Ala Tyr Arg Val Ala Ser
305 310 315 320

Trp Ser Thr Ala Arg His Phe Gly Leu Asn His Leu Gly Leu Leu Ala
325 330 335
Pro Gly Lys Gln Ala Asp Ile Val Leu Leu Ser Asp Ala Arg Lys Val
340 345 350
Thr Val Gln Gln Val Leu Val Lys Gly Glu Pro Ile Asp Ala Gln Thr
355 360 365
Leu Gln Ala Glu Glu Ser Ala Arg Leu Ala Gln Ser Ala Pro Pro Tyr
370 375 380
Gly Asn Thr Ile Ala Arg Gln Pro Val Ser Ala Ser Asp Phe Ala Leu
385 390 395 400
Gln Phe Thr Pro Gly Lys Arg Tyr Arg Val Ile Asp Val Ile His Asn
405 410 415
Glu Leu Ile Thr His Ser His Ser Ser Val Tyr Ser Glu Asn Gly Phe
420 425 430
Asp Arg Asp Asp Val Ser Phe Ile Ala Val Leu Glu Arg Tyr Gly Gln
435 440 445
Arg Leu Ala Pro Ala Cys Gly Leu Leu Gly Gly Phe Gly Leu Asn Glu
450 455 460
Gly Ala Leu Ala Ala Thr Val Ser His Asp Ser His Asn Ile Val Val
465 470 475 480
Ile Gly Arg Ser Ala Glu Glu Met Ala Leu Ala Val Asn Gln Val Ile
485 490 495
Gln Asp Gly Gly Gly Leu Cys Val Val Arg Asn Gly Gln Val Gln Ser
500 505 510
His Leu Pro Leu Pro Ile Ala Gly Leu Met Ser Thr Asp Thr Ala Gln
515 520 525
Ser Leu Ala Glu Gln Ile Asp Ala Leu Lys Ala Ala Ala Arg Glu Cys
530 535 540
Gly Pro Leu Pro Asp Glu Pro Phe Ile Gln Met Ala Phe Leu Ser Leu
545 550 555 560
Pro Val Ile Pro Ala Leu Lys Leu Thr Ser Gln Gly Leu Phe Asp Gly
565 570 575
Glu Lys Phe Ala Phe Thr Thr Leu Glu Val Thr Glu
580 585

<210> 255
<211> 408
<212> PRT
<213> E. Coli

<400> 255
Met Ala Tyr Cys Asn Pro Gly Leu Glu Ser Arg Pro Asn Lys Arg Asn
1 5 10 15
Ala Leu Arg Arg His Val Val Thr Gly Ile Gly Met Lys Ile Val Ile
20 25 30
Ala Pro Asp Ser Tyr Lys Glu Ser Leu Ser Ala Ser Glu Val Ala Gln
35 40 45
Ala Ile Glu Lys Gly Phe Arg Glu Ile Phe Pro Asp Ala Gln Tyr Val
50 55 60
Ser Val Pro Val Ala Asp Gly Gly Glu Gly Thr Val Glu Ala Met Ile
65 70 75 80
Ala Ala Thr Gln Gly Ala Glu Arg His Ala Trp Val Thr Gly Pro Leu
85 90 95
Gly Glu Lys Val Asn Ala Ser Trp Gly Ile Ser Gly Asp Gly Lys Thr
100 105 110
Ala Phe Ile Glu Met Ala Ala Ala Ser Gly Leu Glu Leu Val Pro Ala

```
        115                 120                 125
Glu Lys Arg Asp Pro Leu Val Thr Thr Ser Arg Gly Thr Gly Glu Leu
    130                 135                 140
Ile Leu Gln Ala Leu Glu Ser Gly Ala Thr Asn Ile Ile Ile Gly Ile
145                 150                 155                 160
Gly Gly Ser Ala Thr Asn Asp Gly Gly Ala Gly Met Val Gln Ala Leu
                165                 170                 175
Gly Ala Lys Leu Cys Asp Ala Asn Gly Asn Glu Ile Gly Phe Gly Gly
            180                 185                 190
Gly Ser Leu Asn Thr Leu Asn Asp Ile Asp Ile Ser Gly Leu Asp Pro
        195                 200                 205
Arg Leu Lys Asp Cys Val Ile Arg Val Ala Cys Asp Val Thr Asn Pro
    210                 215                 220
Leu Val Gly Asp Asn Gly Ala Ser Arg Ile Phe Gly Pro Gln Lys Gly
225                 230                 235                 240
Ala Ser Glu Ala Met Ile Val Glu Leu Asp Asn Asn Leu Ser His Tyr
                245                 250                 255
Ala Glu Val Ile Lys Lys Ala Leu His Val Asp Val Lys Asp Val Pro
            260                 265                 270
Gly Ala Gly Ala Ala Gly Gly Met Gly Ala Ala Leu Met Ala Phe Leu
        275                 280                 285
Gly Ala Glu Leu Lys Ser Gly Ile Glu Ile Val Thr Thr Ala Leu Asn
    290                 295                 300
Leu Glu Glu His Ile His Asp Cys Thr Leu Val Ile Thr Gly Glu Gly
305                 310                 315                 320
Arg Ile Asp Ser Gln Ser Ile His Gly Lys Val Pro Ile Gly Val Ala
                325                 330                 335
Asn Val Ala Lys Lys Tyr His Lys Pro Val Ile Gly Ile Ala Gly Ser
            340                 345                 350
Leu Thr Asp Asp Val Gly Val Val His Gln His Gly Ile Asp Ala Val
        355                 360                 365
Phe Ser Val Leu Thr Ser Ile Gly Thr Leu Asp Glu Ala Phe Arg Gly
    370                 375                 380
Ala Tyr Asp Asn Ile Cys Arg Ala Ser Arg Asn Ile Ala Ala Thr Leu
385                 390                 395                 400
Ala Ile Gly Met Arg Asn Ala Gly
                405
```

<210> 256
<211> 299
<212> PRT
<213> E. Coli

<400> 256

```
Met Ile Asp Met Thr Met Lys Val Gly Phe Ile Gly Leu Gly Ile Met
 1               5                  10                  15
Gly Lys Pro Met Ser Lys Asn Leu Leu Lys Ala Gly Tyr Ser Leu Val
            20                  25                  30
Val Ala Asp Arg Asn Pro Glu Ala Ile Ala Asp Val Ile Ala Ala Gly
        35                  40                  45
Ala Glu Thr Ala Ser Thr Ala Lys Ala Ile Ala Glu Gln Cys Asp Val
    50                  55                  60
Ile Ile Thr Met Leu Pro Asn Ser Pro His Val Lys Glu Val Ala Leu
65                  70                  75                  80
Gly Glu Asn Gly Ile Ile Glu Gly Ala Lys Pro Gly Thr Val Leu Ile
                85                  90                  95
```

```
Asp Met Ser Ser Ile Ala Pro Leu Ala Ser Arg Glu Ile Ser Glu Ala
            100                 105                 110
Leu Lys Ala Lys Gly Ile Asp Met Leu Asp Ala Pro Val Ser Gly Gly
        115                 120                 125
Glu Pro Lys Ala Ile Asp Gly Thr Leu Ser Val Met Val Gly Gly Asp
    130                 135                 140
Lys Ala Ile Phe Asp Lys Tyr Tyr Asp Leu Met Lys Ala Met Ala Gly
145                 150                 155                 160
Ser Val Val His Thr Gly Glu Ile Gly Ala Gly Asn Val Thr Lys Leu
                165                 170                 175
Ala Asn Gln Val Ile Val Ala Leu Asn Ile Ala Ala Met Ser Glu Ala
            180                 185                 190
Leu Thr Leu Ala Thr Lys Ala Gly Val Asn Pro Asp Leu Val Tyr Gln
        195                 200                 205
Ala Ile Arg Gly Gly Leu Ala Gly Ser Thr Val Leu Asp Ala Lys Ala
    210                 215                 220
Pro Met Val Met Asp Arg Asn Phe Lys Pro Gly Phe Arg Ile Asp Leu
225                 230                 235                 240
His Ile Lys Asp Leu Ala Asn Ala Leu Asp Thr Ser His Gly Val Gly
                245                 250                 255
Ala Gln Leu Pro Leu Thr Ala Ala Val Met Glu Met Met Gln Ala Leu
            260                 265                 270
Arg Ala Asp Gly Leu Gly Thr Ala Asp His Ser Ala Leu Ala Cys Tyr
        275                 280                 285
Tyr Glu Lys Leu Ala Lys Val Glu Val Thr Arg
    290                 295
```

<210> 257
<211> 256
<212> PRT
<213> E. Coli

<400> 257

```
Met Asn Asn Asp Val Phe Pro Asn Lys Phe Lys Ala Ala Leu Ala Ala
 1               5                  10                  15
Lys Gln Val Gln Ile Gly Cys Trp Ser Ala Leu Ser Asn Pro Ile Ser
            20                  25                  30
Thr Glu Val Leu Gly Leu Ala Gly Phe Asp Trp Leu Val Leu Asp Gly
        35                  40                  45
Glu His Ala Pro Asn Asp Ile Ser Thr Phe Ile Pro Gln Leu Met Ala
    50                  55                  60
Leu Lys Gly Ser Ala Ser Ala Pro Val Val Arg Val Pro Thr Asn Glu
65                  70                  75                  80
Pro Val Ile Ile Lys Arg Leu Leu Asp Ile Gly Phe Tyr Asn Phe Leu
                85                  90                  95
Ile Pro Phe Val Glu Thr Lys Glu Glu Ala Glu Leu Ala Val Ala Ser
            100                 105                 110
Thr Arg Tyr Pro Pro Glu Gly Ile Arg Gly Val Ser Val Ser His Arg
        115                 120                 125
Ala Asn Met Phe Gly Thr Val Ala Asp Tyr Phe Ala Gln Ser Asn Lys
    130                 135                 140
Asn Ile Thr Ile Leu Val Gln Ile Glu Ser Gln Gln Gly Val Asp Asn
145                 150                 155                 160
Val Asp Ala Ile Ala Ala Thr Glu Gly Val Asp Gly Ile Phe Val Gly
                165                 170                 175
```

```
Pro Ser Asp Leu Ala Ala Ala Leu Gly His Leu Gly Asn Ala Ser His
            180                 185                 190
Pro Asp Val Gln Lys Ala Ile Gln His Ile Phe Asn Arg Ala Ser Ala
        195                 200                 205
His Gly Lys Pro Ser Gly Ile Leu Ala Pro Val Glu Ala Asp Ala Arg
    210                 215                 220
Arg Tyr Leu Glu Trp Gly Ala Thr Phe Val Ala Val Gly Ser Asp Leu
225                 230                 235                 240
Gly Val Phe Arg Ser Ala Thr Gln Lys Leu Ala Asp Thr Phe Lys Lys
                245                 250                 255


      <210> 258
      <211> 444
      <212> PRT
      <213> E. Coli

      <400> 258
Met Ile Leu Asp Thr Val Asp Glu Lys Lys Lys Gly Val His Thr Arg
 1               5                  10                  15
Tyr Leu Ile Leu Leu Ile Ile Phe Ile Val Thr Ala Val Asn Tyr Ala
            20                  25                  30
Asp Arg Ala Thr Leu Ser Ile Ala Gly Thr Glu Val Ala Lys Glu Leu
        35                  40                  45
Gln Leu Ser Ala Val Ser Met Gly Tyr Ile Phe Ser Ala Phe Gly Trp
    50                  55                  60
Ala Tyr Leu Leu Met Gln Ile Pro Gly Gly Trp Leu Leu Asp Lys Phe
65                  70                  75                  80
Gly Ser Lys Lys Val Tyr Thr Tyr Ser Leu Phe Phe Trp Ser Leu Phe
                85                  90                  95
Thr Phe Leu Gln Gly Phe Val Asp Met Phe Pro Leu Ala Trp Ala Gly
            100                 105                 110
Ile Ser Met Phe Phe Met Arg Phe Met Leu Gly Phe Ser Glu Ala Pro
        115                 120                 125
Ser Phe Pro Ala Asn Ala Arg Ile Val Ala Ala Trp Phe Pro Thr Lys
    130                 135                 140
Glu Arg Gly Thr Ala Ser Ala Ile Phe Asn Ser Ala Gln Tyr Phe Ser
145                 150                 155                 160
Leu Ala Leu Phe Ser Pro Leu Leu Gly Trp Leu Thr Phe Ala Trp Gly
                165                 170                 175
Trp Glu His Val Phe Thr Val Met Gly Val Ile Gly Phe Val Leu Thr
            180                 185                 190
Ala Leu Trp Ile Lys Leu Ile His Asn Pro Thr Asp His Pro Arg Met
        195                 200                 205
Ser Ala Glu Glu Leu Lys Phe Ile Ser Glu Asn Gly Ala Val Val Asp
    210                 215                 220
Met Asp His Lys Lys Pro Gly Ser Ala Ala Ala Ser Gly Pro Lys Leu
225                 230                 235                 240
His Tyr Ile Lys Gln Leu Leu Ser Asn Arg Met Met Leu Gly Val Phe
                245                 250                 255
Phe Gly Gln Tyr Phe Ile Asn Thr Ile Thr Trp Phe Phe Leu Thr Trp
            260                 265                 270
Phe Pro Ile Tyr Leu Val Gln Glu Lys Gly Met Ser Ile Leu Lys Val
        275                 280                 285
Gly Leu Val Ala Ser Ile Pro Ala Leu Cys Gly Phe Ala Gly Gly Val
    290                 295                 300
Leu Gly Gly Val Phe Ser Asp Tyr Leu Ile Lys Arg Gly Leu Ser Leu
```

```
305                 310                 315                 320
Thr Leu Ala Arg Lys Leu Pro Ile Val Leu Gly Met Leu Leu Ala Ser
                325                 330                 335
Thr Ile Ile Leu Cys Asn Tyr Thr Asn Asn Thr Thr Leu Val Val Met
            340                 345                 350
Leu Met Ala Leu Ala Phe Phe Gly Lys Gly Phe Gly Ala Leu Gly Trp
        355                 360                 365
Pro Val Ile Ser Asp Thr Ala Pro Lys Glu Ile Val Gly Leu Cys Gly
    370                 375                 380
Gly Val Phe Asn Val Phe Gly Asn Val Ala Ser Ile Val Thr Pro Leu
385                 390                 395                 400
Val Ile Gly Tyr Leu Val Ser Glu Leu His Ser Phe Asn Ala Ala Leu
                405                 410                 415
Val Phe Val Gly Cys Ser Ala Leu Met Ala Met Val Cys Tyr Leu Phe
            420                 425                 430
Val Val Gly Asp Ile Lys Arg Met Glu Leu Gln Lys
        435                 440
```

<210> 259
<211> 511
<212> PRT
<213> E. Coli

<400> 259

```
Met Gln Thr Ser Asp Thr Arg Ala Leu Pro Leu Leu Cys Ala Arg Ser
 1                5                  10                  15
Val Tyr Lys Gln Tyr Ser Gly Val Asn Val Leu Lys Gly Ile Asp Phe
            20                  25                  30
Thr Leu His Gln Gly Glu Val His Ala Leu Leu Gly Gly Asn Gly Ala
        35                  40                  45
Gly Lys Ser Thr Leu Met Lys Ile Ile Ala Gly Ile Thr Pro Ala Asp
    50                  55                  60
Ser Gly Thr Leu Glu Ile Glu Gly Asn Asn Tyr Val Arg Leu Thr Pro
65                  70                  75                  80
Val His Ala His Gln Leu Gly Ile Tyr Leu Val Pro Gln Glu Pro Leu
                85                  90                  95
Leu Phe Pro Ser Leu Ser Ile Lys Glu Asn Ile Leu Phe Gly Leu Ala
            100                 105                 110
Lys Lys Gln Leu Ser Met Gln Lys Met Lys Asn Leu Leu Ala Ala Leu
        115                 120                 125
Gly Cys Gln Phe Asp Leu His Ser Leu Ala Gly Ser Leu Asp Val Ala
    130                 135                 140
Asp Arg Gln Met Val Glu Ile Leu Arg Gly Leu Met Arg Asp Ser Arg
145                 150                 155                 160
Ile Leu Ile Leu Asp Glu Pro Thr Ala Ser Leu Thr Pro Ala Glu Thr
                165                 170                 175
Glu Arg Leu Phe Ser Arg Leu Gln Glu Leu Leu Ala Thr Gly Val Gly
            180                 185                 190
Ile Val Phe Ile Ser His Lys Leu Pro Glu Ile Arg Gln Ile Ala Asp
        195                 200                 205
Arg Ile Ser Val Met Arg Asp Gly Thr Ile Ala Leu Ser Gly Lys Thr
    210                 215                 220
Ser Glu Leu Ser Thr Asp Asp Ile Ile Gln Ala Ile Thr Pro Ala Val
225                 230                 235                 240
Arg Glu Lys Ser Leu Ser Ala Ser Gln Lys Leu Trp Leu Glu Leu Pro
                245                 250                 255
```

```
Gly Asn Arg Pro Gln His Ala Ala Gly Thr Pro Val Leu Thr Leu Glu
            260                 265                 270
Asn Leu Thr Gly Glu Gly Phe Arg Asn Val Ser Leu Thr Leu Asn Ala
        275                 280                 285
Gly Glu Ile Leu Gly Leu Ala Gly Leu Val Gly Ala Gly Arg Thr Glu
    290                 295                 300
Leu Ala Glu Thr Leu Tyr Gly Leu Arg Thr Leu Arg Gly Gly Arg Ile
305                 310                 315                 320
Met Leu Asn Gly Lys Glu Ile Asn Lys Leu Ser Thr Gly Glu Arg Leu
                325                 330                 335
Leu Arg Gly Leu Val Tyr Leu Pro Glu Asp Arg Gln Ser Ser Gly Leu
            340                 345                 350
Asn Leu Asp Ala Ser Leu Ala Trp Asn Val Cys Ala Leu Thr His Asn
        355                 360                 365
Leu Arg Gly Phe Trp Ala Lys Thr Ala Lys Asp Asn Ala Thr Leu Glu
    370                 375                 380
Arg Tyr Arg Arg Ala Leu Asn Ile Lys Phe Asn Gln Pro Glu Gln Ala
385                 390                 395                 400
Ala Arg Thr Leu Ser Gly Gly Asn Gln Gln Lys Ile Leu Ile Ala Lys
                405                 410                 415
Cys Leu Glu Ala Ser Pro Gln Val Leu Ile Val Asp Glu Pro Thr Arg
            420                 425                 430
Gly Val Asp Val Ser Ala Arg Asn Asp Ile Tyr Gln Leu Leu Arg Ser
        435                 440                 445
Ile Ala Ala Gln Asn Val Ala Val Leu Leu Ile Ser Ser Asp Leu Glu
    450                 455                 460
Glu Ile Glu Leu Met Ala Asp Arg Val Tyr Val Met His Gln Gly Glu
465                 470                 475                 480
Ile Thr His Ser Ala Leu Thr Glu Arg Asp Ile Asn Val Glu Thr Ile
                485                 490                 495
Met Arg Val Ala Phe Gly Asp Ser Gln Arg Gln Glu Ala Ser Cys
            500                 505                 510
```


<210> 260
<211> 342
<212> PRT
<213> E. Coli

<400> 260

```
Met Leu Lys Phe Ile Gln Asn Asn Arg Glu Ile Thr Ala Leu Leu Ala
 1               5                  10                  15
Val Val Leu Leu Phe Val Leu Pro Gly Phe Leu Asp Arg Gln Tyr Leu
            20                  25                  30
Ser Val Gln Thr Leu Thr Met Val Tyr Ser Ser Ala Gln Ile Leu Ile
        35                  40                  45
Leu Leu Ala Met Gly Ala Thr Leu Val Met Leu Thr Arg Asn Ile Asp
    50                  55                  60
Val Ser Val Gly Ser Ile Thr Gly Met Cys Ala Val Leu Leu Gly Met
65                  70                  75                  80
Leu Leu Asn Ala Gly Tyr Ser Leu Pro Val Ala Cys Val Ala Thr Leu
                85                  90                  95
Leu Leu Gly Leu Leu Ala Gly Phe Phe Asn Gly Val Leu Val Ala Trp
            100                 105                 110
Leu Lys Ile Pro Ala Ile Val Ala Thr Leu Gly Thr Leu Gly Leu Tyr
        115                 120                 125
Arg Gly Ile Met Leu Leu Trp Thr Gly Gly Lys Trp Ile Glu Gly Leu
```

```
    130                 135                 140
Pro Ala Glu Leu Lys Gln Leu Ser Ala Pro Leu Leu Leu Gly Val Ser
145                 150                 155                 160
Ala Ile Gly Trp Leu Thr Ile Ile Leu Val Ala Phe Met Ala Trp Leu
                165                 170                 175
Leu Ala Lys Thr Ala Phe Gly Arg Ser Phe Tyr Ala Thr Gly Asp Asn
            180                 185                 190
Leu Gln Gly Ala Arg Gln Leu Gly Val Arg Thr Glu Ala Ile Arg Ile
        195                 200                 205
Val Ala Phe Ser Leu Asn Gly Cys Met Ala Ala Leu Ala Gly Ile Val
    210                 215                 220
Phe Ala Ser Gln Ile Gly Phe Ile Pro Asn Gln Thr Gly Thr Gly Leu
225                 230                 235                 240
Glu Met Lys Ala Ile Ala Ala Cys Val Leu Gly Gly Ile Ser Leu Leu
                245                 250                 255
Gly Gly Ser Gly Ala Ile Ile Gly Ala Val Leu Gly Ala Trp Phe Leu
            260                 265                 270
Thr Gln Ile Asp Ser Val Leu Val Leu Leu Arg Ile Pro Ala Trp Trp
        275                 280                 285
Asn Asp Phe Ile Ala Gly Leu Val Leu Leu Ala Val Leu Val Phe Asp
    290                 295                 300
Gly Arg Leu Arg Cys Ala Leu Glu Arg Asn Leu Arg Arg Gln Lys Tyr
305                 310                 315                 320
Ala Arg Phe Met Thr Pro Pro Pro Ser Val Lys Pro Ala Ser Ser Gly
                325                 330                 335
Lys Lys Arg Glu Ala Ala
            340

      <210> 261
      <211> 330
      <212> PRT
      <213> E. Coli

      <400> 261
Met Arg Ile Arg Tyr Gly Trp Glu Leu Ala Leu Ala Ala Leu Leu Val
 1               5                  10                  15
Ile Glu Ile Val Ala Phe Gly Ala Ile Asn Pro Arg Met Leu Asp Leu
            20                  25                  30
Asn Met Leu Leu Phe Ser Thr Ser Asp Phe Ile Cys Ile Gly Ile Val
        35                  40                  45
Ala Leu Pro Leu Thr Met Val Ile Val Ser Gly Gly Ile Asp Ile Ser
    50                  55                  60
Phe Gly Ser Thr Ile Gly Leu Cys Ala Ile Ala Leu Gly Val Leu Phe
65                  70                  75                  80
Gln Ser Gly Val Pro Met Pro Leu Ala Ile Leu Leu Thr Leu Leu Leu
                85                  90                  95
Gly Ala Leu Cys Gly Leu Ile Asn Ala Gly Leu Ile Ile Tyr Thr Lys
            100                 105                 110
Val Asn Pro Leu Val Ile Thr Leu Gly Thr Leu Tyr Leu Phe Ala Gly
        115                 120                 125
Ser Ala Leu Leu Leu Ser Gly Met Ala Gly Ala Thr Gly Tyr Glu Gly
    130                 135                 140
Ile Gly Gly Phe Pro Met Ala Phe Thr Asp Phe Ala Asn Leu Asp Val
145                 150                 155                 160
Leu Gly Leu Pro Val Pro Leu Ile Ile Phe Leu Ile Cys Leu Leu Val
                165                 170                 175
Phe Trp Leu Trp Leu His Lys Thr His Ala Gly Arg Asn Val Phe Leu
```

180 185 190
Ile Gly Gln Ser Pro Arg Val Ala Leu Tyr Ser Ala Ile Pro Val Asn
195 200 205
Arg Thr Leu Cys Ala Leu Tyr Ala Met Thr Gly Leu Ala Ser Ala Val
210 215 220
Ala Ala Val Leu Leu Val Ser Tyr Phe Gly Ser Ala Arg Ser Asp Leu
225 230 235 240
Gly Ala Ser Phe Leu Met Pro Ala Ile Thr Ala Val Val Leu Gly Gly
245 250 255
Ala Asn Ile Tyr Gly Gly Ser Gly Ser Ile Ile Gly Thr Ala Ile Ala
260 265 270
Val Leu Leu Val Gly Tyr Leu Gln Gln Gly Leu Gln Met Ala Gly Val
275 280 285
Pro Asn Gln Val Ser Ser Ala Leu Ser Gly Ala Leu Leu Ile Val Val
290 295 300
Val Val Gly Arg Ser Val Ser Leu His Arg Gln Gln Ile Lys Glu Trp
305 310 315 320
Leu Ala Arg Arg Ala Asn Asn Pro Leu Pro
325 330

<210> 262
<211> 340
<212> PRT
<213> E. Coli

<400> 262
Met Thr Leu His Arg Phe Lys Lys Ile Ala Leu Leu Ser Ala Leu Gly
1 5 10 15
Ile Ala Ala Ile Ser Met Asn Val Gln Ala Ala Glu Arg Ile Ala Phe
20 25 30
Ile Pro Lys Leu Val Gly Val Gly Phe Phe Thr Ser Gly Gly Asn Gly
35 40 45
Ala Gln Gln Ala Gly Lys Glu Leu Gly Val Asp Val Thr Tyr Asp Gly
50 55 60
Pro Thr Glu Pro Ser Val Ser Gly Gln Val Gln Leu Ile Asn Asn Phe
65 70 75 80
Val Asn Gln Gly Tyr Asn Ala Ile Ile Val Ser Ala Val Ser Pro Asp
85 90 95
Gly Leu Cys Pro Ala Leu Lys Arg Ala Met Gln Arg Gly Val Arg Val
100 105 110
Leu Thr Trp Asp Ser Asp Thr Lys Pro Glu Cys Arg Ser Tyr Tyr Ile
115 120 125
Asn Gln Gly Thr Pro Ala Gln Leu Gly Gly Met Leu Val Asp Met Ala
130 135 140
Ala Arg Gln Val Asn Lys Asp Lys Ala Lys Val Ala Phe Phe Tyr Ser
145 150 155 160
Ser Pro Thr Val Thr Asp Gln Asn Gln Trp Val Lys Glu Ala Lys Ala
165 170 175
Lys Ile Ala Lys Glu His Pro Gly Trp Glu Ile Val Thr Thr Gln Phe
180 185 190
Gly Tyr Asn Asp Ala Thr Lys Ser Leu Gln Thr Ala Glu Gly Ile Leu
195 200 205
Lys Ala Tyr Ser Asp Leu Asp Ala Ile Ile Ala Pro Asp Ala Asn Ala
210 215 220

```
Leu Pro Ala Ala Ala Gln Ala Ala Glu Asn Leu Lys Asn Asp Lys Val
225                 230                 235                 240
Ala Ile Val Gly Phe Ser Thr Pro Asn Val Met Arg Pro Tyr Val Glu
                245                 250                 255
Arg Gly Thr Val Lys Glu Phe Gly Leu Trp Asp Val Val Gln Gln Gly
            260                 265                 270
Lys Ile Ser Val Tyr Val Ala Asp Ala Leu Leu Lys Lys Gly Ser Met
        275                 280                 285
Lys Thr Gly Asp Lys Leu Asp Ile Lys Gly Val Gly Gln Val Glu Val
    290                 295                 300
Ser Pro Asn Ser Val Gln Gly Tyr Asp Tyr Glu Ala Asp Gly Asn Gly
305                 310                 315                 320
Ile Val Leu Leu Pro Glu Arg Val Ile Phe Asn Lys Glu Asn Ile Gly
                325                 330                 335
Lys Tyr Asp Phe
            340
```

<210> 263
<211> 291
<212> PRT
<213> E. Coli

<400> 263

```
Met Ala Asp Leu Asp Asp Ile Lys Asp Gly Lys Asp Phe Arg Thr Asp
 1                5                  10                  15
Gln Pro Gln Lys Asn Ile Pro Phe Thr Leu Lys Gly Cys Gly Ala Leu
            20                  25                  30
Asp Trp Gly Met Gln Ser Arg Leu Ser Arg Ile Phe Asn Pro Lys Thr
        35                  40                  45
Gly Lys Thr Val Met Leu Ala Phe Asp His Gly Tyr Phe Gln Gly Pro
    50                  55                  60
Thr Thr Gly Leu Glu Arg Ile Asp Ile Asn Ile Ala Pro Leu Phe Glu
65                  70                  75                  80
His Ala Asp Val Leu Met Cys Thr Arg Gly Ile Leu Arg Ser Val Val
                85                  90                  95
Pro Pro Ala Thr Asn Arg Pro Val Val Leu Arg Ala Ser Gly Ala Asn
            100                 105                 110
Ser Ile Leu Ala Glu Leu Ser Asn Glu Ala Val Ala Leu Ser Met Asp
        115                 120                 125
Asp Ala Val Arg Leu Asn Ser Cys Ala Val Ala Ala Gln Val Tyr Ile
    130                 135                 140
Gly Ser Glu Tyr Glu His Gln Ser Ile Lys Asn Ile Ile Gln Leu Val
145                 150                 155                 160
Asp Ala Gly Met Lys Val Gly Met Pro Thr Met Ala Val Thr Gly Val
                165                 170                 175
Gly Lys Asp Met Val Arg Asp Gln Arg Tyr Phe Ser Leu Ala Thr Arg
            180                 185                 190
Ile Ala Ala Glu Met Gly Ala Gln Ile Ile Lys Thr Tyr Tyr Val Glu
        195                 200                 205
Lys Gly Phe Glu Arg Ile Val Ala Gly Cys Pro Val Pro Ile Val Ile
    210                 215                 220
Ala Gly Gly Lys Lys Leu Pro Glu Arg Glu Ala Leu Glu Met Cys Trp
225                 230                 235                 240
Gln Ala Ile Asp Gln Gly Ala Ser Gly Val Asp Met Gly Arg Asn Ile
                245                 250                 255
Phe Gln Ser Asp His Pro Val Ala Met Met Lys Ala Val Gln Ala Val
```

```
            260                 265                 270
Val His His Asn Glu Thr Ala Asp Arg Ala Tyr Glu Leu Tyr Leu Ser
        275                 280                 285
Glu Lys Gln
    290
```

<210> 264
<211> 96
<212> PRT
<213> E. Coli

<400> 264

```
Met His Val Thr Leu Val Glu Ile Asn Val His Glu Asp Lys Val Asp
 1               5                  10                  15
Glu Phe Ile Glu Val Phe Arg Gln Asn His Leu Gly Ser Val Gln Glu
            20                  25                  30
Glu Gly Asn Leu Arg Phe Asp Val Leu Gln Asp Pro Glu Val Asn Ser
        35                  40                  45
Arg Phe Tyr Ile Tyr Glu Ala Tyr Lys Asp Glu Asp Ala Val Ala Phe
    50                  55                  60
His Lys Thr Thr Pro His Tyr Lys Thr Cys Val Ala Lys Leu Glu Ser
65                  70                  75                  80
Leu Met Thr Gly Pro Arg Lys Lys Arg Leu Phe Asn Gly Leu Met Pro
                85                  90                  95
```

<210> 265
<211> 383
<212> PRT
<213> E. Coli

<400> 265

```
Met Phe Glu Pro Met Glu Leu Thr Asn Asp Ala Val Ile Lys Val Ile
 1               5                  10                  15
Gly Val Gly Gly Gly Gly Gly Asn Ala Val Glu His Met Val Arg Glu
            20                  25                  30
Arg Ile Glu Gly Val Glu Phe Phe Ala Val Asn Thr Asp Ala Gln Ala
        35                  40                  45
Leu Arg Lys Thr Ala Val Gly Gln Thr Ile Gln Ile Gly Ser Gly Ile
    50                  55                  60
Thr Lys Gly Leu Gly Ala Gly Ala Asn Pro Glu Val Gly Arg Asn Ala
65                  70                  75                  80
Ala Asp Glu Asp Arg Asp Ala Leu Arg Ala Ala Leu Glu Gly Ala Asp
                85                  90                  95
Met Val Phe Ile Ala Ala Gly Met Gly Gly Gly Thr Gly Thr Gly Ala
            100                 105                 110
Ala Pro Val Val Ala Glu Val Ala Lys Asp Leu Gly Ile Leu Thr Val
        115                 120                 125
Ala Val Val Thr Lys Pro Phe Asn Phe Glu Gly Lys Lys Arg Met Ala
    130                 135                 140
Phe Ala Glu Gln Gly Ile Thr Glu Leu Ser Lys His Val Asp Ser Leu
145                 150                 155                 160
Ile Thr Ile Pro Asn Asp Lys Leu Leu Lys Val Leu Gly Arg Gly Ile
                165                 170                 175
Ser Leu Leu Asp Ala Phe Gly Ala Ala Asn Asp Val Leu Lys Gly Ala
            180                 185                 190
```

```
Val Gln Gly Ile Ala Glu Leu Ile Thr Arg Pro Gly Leu Met Asn Val
        195                 200                 205
Asp Phe Ala Asp Val Arg Thr Val Met Ser Glu Met Gly Tyr Ala Met
    210                 215                 220
Met Gly Ser Gly Val Ala Ser Gly Glu Asp Arg Ala Glu Glu Ala Ala
225                 230                 235                 240
Glu Met Ala Ile Ser Ser Pro Leu Leu Glu Asp Ile Asp Leu Ser Gly
                245                 250                 255
Ala Arg Gly Val Leu Val Asn Ile Thr Ala Gly Phe Asp Leu Arg Leu
            260                 265                 270
Asp Glu Phe Glu Thr Val Gly Asn Thr Ile Arg Ala Phe Ala Ser Asp
        275                 280                 285
Asn Ala Thr Val Val Ile Gly Thr Ser Leu Asp Pro Asp Met Asn Asp
    290                 295                 300
Glu Leu Arg Val Thr Val Val Ala Thr Gly Ile Gly Met Asp Lys Arg
305                 310                 315                 320
Pro Glu Ile Thr Leu Val Thr Asn Lys Gln Val Gln Gln Pro Val Met
                325                 330                 335
Asp Arg Tyr Gln Gln His Gly Met Ala Pro Leu Thr Gln Glu Gln Lys
            340                 345                 350
Pro Val Ala Lys Val Val Asn Asp Asn Ala Pro Gln Thr Ala Lys Glu
        355                 360                 365
Pro Asp Tyr Leu Asp Ile Pro Ala Phe Leu Arg Lys Gln Ala Asp
    370                 375                 380
```

<210> 266
<211> 1014
<212> PRT
<213> E. Coli

<400> 266

```
Met Asp Val Ser Arg Arg Gln Phe Phe Lys Ile Cys Ala Gly Gly Met
 1               5                  10                  15
Ala Gly Thr Thr Val Ala Ala Leu Gly Phe Ala Pro Lys Gln Ala Leu
            20                  25                  30
Ala Gln Ala Arg Asn Tyr Lys Leu Leu Arg Ala Lys Glu Ile Arg Asn
        35                  40                  45
Thr Cys Thr Tyr Cys Ser Val Gly Cys Gly Leu Leu Met Tyr Ser Leu
    50                  55                  60
Gly Asp Gly Ala Lys Asn Ala Arg Glu Ala Ile Tyr His Ile Glu Gly
65                  70                  75                  80
Asp Pro Asp His Pro Val Ser Arg Gly Ala Leu Cys Pro Lys Gly Ala
                85                  90                  95
Gly Leu Leu Asp Tyr Val Asn Ser Glu Asn Arg Leu Arg Tyr Pro Glu
            100                 105                 110
Tyr Arg Ala Pro Gly Ser Asp Lys Trp Gln Arg Ile Ser Trp Glu Glu
        115                 120                 125
Ala Phe Ser Arg Ile Ala Lys Leu Met Lys Ala Asp Arg Asp Ala Asn
    130                 135                 140
Phe Ile Glu Lys Asn Glu Gln Gly Val Thr Val Asn Arg Trp Leu Ser
145                 150                 155                 160
Thr Gly Met Leu Cys Ala Ser Gly Ala Ser Asn Glu Thr Gly Met Leu
                165                 170                 175
Thr Gln Lys Phe Ala Arg Ser Leu Gly Met Leu Ala Val Asp Asn Gln
            180                 185                 190
Ala Arg Val His Gly Pro Thr Val Ala Ser Leu Ala Pro Thr Phe Gly
```

```
        195                 200                 205
Arg Gly Ala Met Thr Asn His Trp Val Asp Ile Lys Asn Ala Asn Val
    210                 215                 220
Val Met Val Met Gly Gly Asn Ala Ala Glu Ala His Pro Val Gly Phe
225                 230                 235                 240
Arg Trp Ala Met Glu Ala Lys Asn Asn Asn Asp Ala Thr Leu Ile Val
                245                 250                 255
Val Asp Pro Arg Phe Thr Arg Thr Ala Ser Val Ala Asp Ile Tyr Ala
            260                 265                 270
Pro Ile Arg Ser Gly Thr Asp Ile Thr Phe Leu Ser Gly Val Leu Arg
        275                 280                 285
Tyr Leu Ile Glu Asn Asn Lys Ile Asn Ala Glu Tyr Val Lys His Tyr
    290                 295                 300
Thr Asn Ala Ser Leu Leu Val Arg Asp Asp Phe Ala Phe Glu Asp Gly
305                 310                 315                 320
Leu Phe Ser Gly Tyr Asp Ala Glu Lys Arg Gln Tyr Asp Lys Ser Ser
                325                 330                 335
Trp Asn Tyr Gln Leu Asp Glu Asn Gly Tyr Ala Lys Arg Asp Glu Thr
            340                 345                 350
Leu Thr His Pro Arg Cys Val Trp Asn Leu Leu Lys Glu His Val Ser
        355                 360                 365
Arg Tyr Thr Pro Asp Val Val Glu Asn Ile Cys Gly Thr Pro Lys Ala
    370                 375                 380
Asp Phe Leu Lys Val Cys Glu Val Leu Ala Ser Thr Ser Ala Pro Asp
385                 390                 395                 400
Arg Thr Thr Thr Phe Leu Tyr Ala Leu Gly Trp Thr Gln His Thr Val
                405                 410                 415
Gly Ala Gln Asn Ile Arg Thr Met Ala Met Ile Gln Leu Leu Leu Gly
            420                 425                 430
Asn Met Gly Met Ala Gly Gly Gly Val Asn Ala Leu Arg Gly His Ser
        435                 440                 445
Asn Ile Gln Gly Leu Thr Asp Leu Gly Leu Leu Ser Thr Ser Leu Pro
    450                 455                 460
Gly Tyr Leu Thr Leu Pro Ser Glu Lys Gln Val Asp Leu Gln Ser Tyr
465                 470                 475                 480
Leu Glu Ala Asn Thr Pro Lys Ala Thr Leu Ala Asp Gln Val Asn Tyr
                485                 490                 495
Trp Ser Asn Tyr Pro Lys Phe Phe Val Ser Leu Met Lys Ser Phe Tyr
            500                 505                 510
Gly Asp Ala Ala Gln Lys Glu Asn Asn Trp Gly Tyr Asp Trp Leu Pro
        515                 520                 525
Lys Trp Asp Gln Thr Tyr Asp Val Ile Lys Tyr Phe Asn Met Met Asp
    530                 535                 540
Glu Gly Lys Val Thr Gly Tyr Phe Cys Gln Gly Phe Asn Pro Val Ala
545                 550                 555                 560
Ser Phe Pro Asp Lys Asn Lys Val Val Ser Cys Leu Ser Lys Leu Lys
                565                 570                 575
Tyr Met Val Val Ile Asp Pro Leu Val Thr Glu Thr Ser Thr Phe Trp
            580                 585                 590
Gln Asn His Gly Glu Ser Asn Asp Val Asp Pro Ala Ser Ile Gln Thr
        595                 600                 605
Glu Val Phe Arg Leu Pro Ser Thr Cys Phe Ala Glu Glu Asp Gly Ser
    610                 615                 620
Ile Ala Asn Ser Gly Arg Trp Leu Gln Trp His Trp Lys Gly Gln Asp
625                 630                 635                 640
Ala Pro Gly Glu Ala Arg Asn Asp Gly Glu Ile Leu Ala Gly Ile Tyr
                645                 650                 655
```

```
His His Leu Arg Glu Leu Tyr Gln Ser Glu Gly Gly Lys Gly Val Glu
            660                 665                 670
Pro Leu Met Lys Met Ser Trp Asn Tyr Lys Gln Pro His Glu Pro Gln
        675                 680                 685
Ser Asp Glu Val Ala Lys Glu Asn Asn Gly Tyr Ala Leu Glu Asp Leu
    690                 695                 700
Tyr Asp Ala Asn Gly Val Leu Ile Ala Lys Lys Gly Gln Leu Leu Ser
705                 710                 715                 720
Ser Phe Ala His Leu Arg Asp Asp Gly Thr Thr Ala Ser Ser Cys Trp
                725                 730                 735
Ile Tyr Thr Gly Ser Trp Thr Glu Gln Gly Asn Gln Met Ala Asn Arg
            740                 745                 750
Asp Asn Ser Asp Pro Ser Gly Leu Gly Asn Thr Leu Gly Trp Ala Trp
        755                 760                 765
Ala Trp Pro Leu Asn Arg Arg Val Leu Tyr Asn Arg Ala Ser Ala Asp
    770                 775                 780
Ile Asn Gly Lys Pro Trp Asp Pro Lys Arg Met Leu Ile Gln Trp Asn
785                 790                 795                 800
Gly Ser Lys Trp Thr Gly Asn Asp Ile Pro Asp Phe Gly Asn Ala Ala
                805                 810                 815
Pro Gly Thr Pro Thr Gly Pro Phe Ile Met Gln Pro Glu Gly Met Gly
            820                 825                 830
Arg Leu Phe Ala Ile Asn Lys Met Ala Glu Gly Pro Phe Pro Glu His
        835                 840                 845
Tyr Glu Pro Ile Glu Thr Pro Leu Gly Thr Asn Pro Leu His Pro Asn
    850                 855                 860
Val Val Ser Asn Pro Val Val Arg Leu Tyr Glu Gln Asp Ala Leu Arg
865                 870                 875                 880
Met Gly Lys Lys Glu Gln Phe Pro Tyr Val Gly Thr Thr Tyr Arg Leu
                885                 890                 895
Thr Glu His Phe His Thr Trp Thr Lys His Ala Leu Leu Asn Ala Ile
            900                 905                 910
Ala Gln Pro Glu Gln Phe Val Glu Ile Ser Glu Thr Leu Ala Ala Ala
        915                 920                 925
Lys Gly Ile Asn Asn Gly Asp Arg Val Thr Val Ser Ser Lys Arg Gly
    930                 935                 940
Phe Ile Arg Ala Val Ala Val Val Thr Arg Arg Leu Lys Pro Leu Asn
945                 950                 955                 960
Val Asn Gly Gln Gln Val Glu Thr Val Gly Ile Pro Ile His Trp Gly
                965                 970                 975
Phe Glu Gly Val Ala Arg Lys Gly Tyr Ile Ala Asn Thr Leu Thr Pro
            980                 985                 990
Asn Val Gly Asp Ala Asn Ser Gln Thr Pro Glu Tyr Lys Ala Phe Leu
        995                 1000                1005
Val Asn Ile Glu Lys Ala
    1010

      <210> 267
      <211> 294
      <212> PRT
      <213> E. Coli

      <400> 267
Met Ala Met Glu Thr Gln Asp Ile Ile Lys Arg Ser Ala Thr Asn Ser
 1               5                  10                  15
Ile Thr Pro Pro Ser Gln Val Arg Asp Tyr Lys Ala Glu Val Ala Lys
            20                  25                  30
```

Leu Ile Asp Val Ser Thr Cys Ile Gly Cys Lys Ala Cys Gln Val Ala
35 40 45
Cys Ser Glu Trp Asn Asp Ile Arg Asp Glu Val Gly His Cys Val Gly
50 55 60
Val Tyr Asp Asn Pro Ala Asp Leu Ser Ala Lys Ser Trp Thr Val Met
65 70 75 80
Arg Phe Ser Glu Thr Glu Gln Asn Gly Lys Leu Glu Trp Leu Ile Arg
85 90 95
Lys Asp Gly Cys Met His Cys Glu Asp Pro Gly Cys Leu Lys Ala Cys
100 105 110
Pro Ser Ala Gly Ala Ile Ile Gln Tyr Ala Asn Gly Ile Val Asp Phe
115 120 125
Gln Ser Glu Asn Cys Ile Gly Cys Gly Tyr Cys Ile Ala Gly Cys Pro
130 135 140
Phe Asn Ile Pro Arg Leu Asn Lys Glu Asp Asn Arg Val Tyr Lys Cys
145 150 155 160
Thr Leu Cys Val Asp Arg Val Ser Val Gly Gln Glu Pro Ala Cys Val
165 170 175
Lys Thr Cys Pro Thr Gly Ala Ile His Phe Gly Thr Lys Lys Glu Met
180 185 190
Leu Glu Leu Ala Glu Gln Arg Val Ala Lys Leu Lys Ala Arg Gly Tyr
195 200 205
Glu His Ala Gly Val Tyr Asn Pro Glu Gly Val Gly Gly Thr His Val
210 215 220
Met Tyr Val Leu His His Ala Asp Gln Pro Glu Leu Tyr His Gly Leu
225 230 235 240
Pro Lys Asp Pro Lys Ile Asp Thr Ser Val Ser Leu Trp Lys Gly Ala
245 250 255
Leu Lys Pro Leu Ala Ala Ala Gly Phe Ile Ala Thr Phe Ala Gly Leu
260 265 270
Ile Phe His Tyr Ile Gly Ile Gly Pro Asn Lys Glu Val Asp Asp Asp
275 280 285
Glu Glu Asp His His Glu
290

<210> 268
<211> 217
<212> PRT
<213> E. Coli

<400> 268
Met Ser Lys Ser Lys Met Ile Val Arg Thr Lys Phe Ile Asp Arg Ala
1 5 10 15
Cys His Trp Thr Val Val Ile Cys Phe Phe Leu Val Ala Leu Ser Gly
20 25 30
Ile Ser Phe Phe Phe Pro Thr Leu Gln Trp Leu Thr Gln Thr Phe Gly
35 40 45
Thr Pro Gln Met Gly Arg Ile Leu His Pro Phe Phe Gly Ile Ala Ile
50 55 60
Phe Val Ala Leu Met Phe Met Phe Val Arg Phe Val His His Asn Ile
65 70 75 80
Pro Asp Lys Lys Asp Ile Pro Trp Leu Leu Asn Ile Val Glu Val Leu
85 90 95
Lys Gly Asn Glu His Lys Val Ala Asp Val Gly Lys Tyr Asn Ala Gly
100 105 110
Gln Lys Met Met Phe Trp Ser Ile Met Ser Met Ile Phe Val Leu Leu

```
        115                 120                 125
Val Thr Gly Val Ile Ile Trp Arg Pro Tyr Phe Ala Gln Tyr Phe Pro
    130                 135                 140
Met Gln Val Val Arg Tyr Ser Leu Leu Ile His Ala Ala Ala Gly Ile
145                 150                 155                 160
Ile Leu Ile His Ala Ile Leu Ile His Met Tyr Met Ala Phe Trp Val
                165                 170                 175
Lys Gly Ser Ile Lys Gly Met Ile Glu Gly Lys Val Ser Arg Arg Trp
            180                 185                 190
Ala Lys Lys His His Pro Arg Trp Tyr Arg Glu Ile Glu Lys Ala Glu
        195                 200                 205
Ala Lys Lys Glu Ser Glu Glu Gly Ile
    210                 215


      <210> 269
      <211> 86
      <212> PRT
      <213> E. Coli

      <400> 269
Met Ala Leu Leu Ile Thr Lys Lys Cys Ile Asn Cys Asp Met Cys Glu
 1               5                  10                  15
Pro Glu Cys Pro Asn Glu Ala Ile Ser Met Gly Asp His Ile Tyr Glu
            20                  25                  30
Ile Asn Ser Asp Lys Cys Thr Glu Cys Val Gly His Tyr Glu Thr Pro
        35                  40                  45
Thr Cys Gln Lys Val Cys Pro Ile Pro Asn Thr Ile Val Lys Asp Pro
    50                  55                  60
Ala His Val Glu Thr Glu Glu Gln Leu Trp Asp Lys Phe Val Leu Met
65                  70                  75                  80
His His Ala Asp Lys Ile
                85


      <210> 270
      <211> 400
      <212> PRT
      <213> E. Coli

      <400> 270
Met Gln Ser Val Asp Val Ala Ile Val Gly Gly Gly Met Val Gly Leu
 1               5                  10                  15
Ala Val Ala Cys Gly Leu Gln Gly Ser Gly Leu Arg Val Ala Val Leu
            20                  25                  30
Glu Gln Arg Val Gln Glu Pro Leu Ala Ala Asn Ala Pro Pro Gln Leu
        35                  40                  45
Arg Val Ser Ala Ile Asn Ala Ala Ser Glu Lys Leu Leu Thr Arg Leu
    50                  55                  60
Gly Val Trp Gln Asp Ile Leu Ser Arg Arg Ala Ser Cys Tyr His Gly
65                  70                  75                  80
Met Glu Val Trp Asp Lys Asp Ser Phe Gly His Ile Ser Phe Asp Asp
                85                  90                  95
Gln Ser Met Gly Tyr Ser His Leu Gly His Ile Val Glu Asn Ser Val
            100                 105                 110
Ile His Tyr Ala Leu Trp Asn Lys Ala His Gln Ser Ser Asp Ile Thr
        115                 120                 125
```

```
Leu Leu Ala Pro Ala Glu Leu Gln Gln Val Ala Trp Gly Glu Asn Glu
    130                 135                 140
Thr Phe Leu Thr Leu Lys Asp Gly Ser Met Leu Thr Ala Arg Leu Val
145                 150                 155                 160
Ile Gly Ala Asp Gly Ala Asn Ser Trp Leu Arg Asn Lys Ala Asp Ile
                165                 170                 175
Pro Leu Thr Phe Trp Asp Tyr Gln His His Ala Leu Val Ala Thr Ile
            180                 185                 190
Arg Thr Glu Glu Pro His Asp Ala Val Ala Arg Gln Val Phe His Gly
        195                 200                 205
Glu Gly Ile Leu Ala Phe Leu Pro Leu Ser Asp Pro His Leu Cys Ser
    210                 215                 220
Ile Val Trp Ser Leu Ser Pro Glu Glu Ala Gln Arg Met Gln Gln Ala
225                 230                 235                 240
Ser Glu Asp Glu Phe Asn Arg Ala Leu Asn Ile Ala Phe Asp Asn Arg
                245                 250                 255
Leu Gly Leu Cys Lys Val Glu Ser Ala Arg Gln Val Phe Pro Leu Thr
            260                 265                 270
Gly Arg Tyr Ala Arg Gln Phe Ala Ser His Arg Leu Ala Leu Val Gly
        275                 280                 285
Asp Ala Ala His Thr Ile His Pro Leu Ala Gly Gln Gly Val Asn Leu
    290                 295                 300
Gly Phe Met Asp Ala Ala Glu Leu Ile Ala Glu Leu Lys Arg Leu His
305                 310                 315                 320
Arg Gln Gly Lys Asp Ile Gly Gln Tyr Ile Tyr Leu Arg Arg Tyr Glu
                325                 330                 335
Arg Ser Arg Lys His Ser Ala Ala Leu Met Leu Ala Gly Met Gln Gly
            340                 345                 350
Phe Arg Asp Leu Phe Ser Gly Thr Asn Pro Ala Lys Lys Leu Leu Arg
        355                 360                 365
Asp Ile Gly Leu Lys Leu Ala Asp Thr Leu Pro Gly Val Lys Pro Gln
    370                 375                 380
Leu Ile Arg Gln Ala Met Gly Leu Asn Asp Leu Pro Glu Trp Leu Arg
385                 390                 395                 400
```

<210> 271
<211> 392
<212> PRT
<213> E. Coli

<400> 271

```
Met Ser Val Ile Ile Val Gly Gly Gly Met Ala Gly Ala Thr Leu Ala
 1                5                  10                  15
Leu Ala Ile Ser Arg Leu Ser His Gly Ala Leu Pro Val His Leu Ile
            20                  25                  30
Glu Ala Thr Ala Pro Glu Ser His Ala His Pro Gly Phe Asp Gly Arg
        35                  40                  45
Ala Ile Ala Leu Ala Ala Gly Thr Cys Gln Gln Leu Ala Arg Ile Gly
    50                  55                  60
Val Trp Gln Ser Leu Ala Asp Cys Ala Thr Ala Ile Thr Thr Val His
65                  70                  75                  80
Val Ser Asp Arg Gly His Ala Gly Phe Val Thr Leu Ala Ala Glu Asp
                85                  90                  95
Tyr Gln Leu Ala Ala Leu Gly Gln Val Val Glu Leu His Asn Val Gly
            100                 105                 110
Gln Arg Leu Phe Ala Leu Leu Arg Lys Ala Pro Gly Val Thr Leu His
```

```
        115                 120                 125
Cys Pro Asp Arg Val Ala Asn Val Ala Arg Thr Gln Ser His Val Glu
    130                 135                 140
Val Thr Leu Glu Ser Gly Glu Thr Leu Thr Gly Arg Val Leu Val Ala
145                 150                 155                 160
Ala Asp Gly Thr His Ser Ala Leu Ala Thr Ala Cys Gly Val Asp Trp
                165                 170                 175
Gln Gln Glu Pro Tyr Glu Gln Leu Ala Val Ile Ala Asn Val Ala Thr
            180                 185                 190
Ser Val Ala His Glu Gly Arg Ala Phe Glu Arg Phe Thr Gln His Gly
        195                 200                 205
Pro Leu Ala Met Leu Pro Met Ser Asp Gly Arg Cys Ser Leu Val Trp
    210                 215                 220
Cys His Pro Leu Glu Arg Arg Glu Glu Val Leu Ser Trp Ser Asp Glu
225                 230                 235                 240
Lys Phe Cys Arg Glu Leu Gln Ser Ala Phe Gly Trp Arg Leu Gly Lys
                245                 250                 255
Ile Thr His Ala Gly Lys Arg Ser Ala Tyr Pro Leu Ala Leu Thr His
            260                 265                 270
Ala Ala Arg Ser Ile Thr His Arg Thr Val Leu Val Gly Asn Ala Ala
        275                 280                 285
Gln Thr Leu His Pro Ile Ala Gly Gln Gly Phe Asn Leu Gly Met Arg
    290                 295                 300
Asp Val Met Ser Leu Ala Glu Thr Leu Thr Gln Ala Gln Glu Arg Gly
305                 310                 315                 320
Glu Asp Met Gly Asp Tyr Gly Val Leu Cys Arg Tyr Gln Gln Arg Arg
                325                 330                 335
Gln Ser Asp Arg Glu Ala Thr Ile Gly Val Thr Asp Ser Leu Val His
            340                 345                 350
Leu Phe Ala Asn Arg Trp Ala Pro Leu Val Val Gly Arg Asn Ile Gly
        355                 360                 365
Leu Met Thr Met Glu Leu Phe Thr Pro Ala Arg Asp Val Leu Ala Gln
    370                 375                 380
Arg Thr Leu Gly Trp Val Ala Arg
385                 390
```

<210> 272
<211> 441
<212> PRT
<213> E. Coli

<400> 272

```
Met Ser Glu Ile Ser Arg Gln Glu Phe Gln Arg Arg Arg Gln Ala Leu
 1                5                  10                  15
Val Glu Gln Met Gln Pro Gly Ser Ala Ala Leu Ile Phe Ala Ala Pro
            20                  25                  30
Glu Val Thr Arg Ser Ala Asp Ser Glu Tyr Pro Tyr Arg Gln Asn Ser
        35                  40                  45
Asp Phe Trp Tyr Phe Thr Gly Phe Asn Glu Pro Glu Ala Val Leu Val
    50                  55                  60
Leu Ile Lys Ser Asp Asp Thr His Asn His Ser Val Leu Phe Asn Arg
65                  70                  75                  80
Val Arg Asp Leu Thr Ala Glu Ile Trp Phe Gly Arg Arg Leu Gly Gln
                85                  90                  95
Asp Ala Ala Pro Glu Lys Leu Gly Val Asp Arg Ala Leu Ala Phe Ser
            100                 105                 110
```

Glu Ile Asn Gln Gln Leu Tyr Gln Leu Leu Asn Gly Leu Asp Val Val
115 120 125
Tyr His Ala Gln Gly Glu Tyr Ala Tyr Ala Asp Val Ile Val Asn Ser
130 135 140
Ala Leu Glu Lys Leu Arg Lys Gly Ser Arg Gln Asn Leu Thr Ala Pro
145 150 155 160
Ala Thr Met Ile Asp Trp Arg Pro Val Val His Glu Met Arg Leu Phe
165 170 175
Lys Ser Pro Glu Glu Ile Ala Val Leu Arg Arg Ala Gly Glu Ile Thr
180 185 190
Ala Met Ala His Thr Arg Ala Met Glu Lys Cys Arg Pro Gly Met Phe
195 200 205
Glu Tyr His Leu Glu Gly Glu Ile His His Glu Phe Asn Arg His Gly
210 215 220
Ala Arg Tyr Pro Ser Tyr Asn Thr Ile Val Gly Ser Gly Glu Asn Gly
225 230 235 240
Cys Ile Leu His Tyr Thr Glu Asn Glu Cys Glu Met Arg Asp Gly Asp
245 250 255
Leu Val Leu Ile Asp Ala Gly Cys Glu Tyr Lys Gly Tyr Ala Gly Asp
260 265 270
Ile Thr Arg Thr Phe Pro Val Asn Gly Lys Phe Thr Gln Ala Gln Arg
275 280 285
Glu Ile Tyr Asp Ile Val Leu Glu Ser Leu Glu Thr Ser Leu Arg Leu
290 295 300
Tyr Arg Pro Gly Thr Ser Ile Leu Glu Val Thr Gly Glu Val Val Arg
305 310 315 320
Ile Met Val Ser Gly Leu Val Lys Leu Gly Ile Leu Lys Gly Asp Val
325 330 335
Asp Glu Leu Ile Ala Gln Asn Ala His Arg Pro Phe Phe Met His Gly
340 345 350
Leu Ser His Trp Leu Gly Leu Asp Val His Asp Val Gly Val Tyr Gly
355 360 365
Gln Asp Arg Ser Arg Ile Leu Glu Pro Gly Met Val Leu Thr Val Glu
370 375 380
Pro Gly Leu Tyr Ile Ala Pro Asp Ala Glu Val Pro Glu Gln Tyr Arg
385 390 395 400
Gly Ile Gly Ile Arg Ile Glu Asp Asp Ile Val Ile Thr Glu Thr Gly
405 410 415
Asn Glu Asn Leu Thr Ala Ser Val Val Lys Lys Pro Glu Glu Ile Glu
420 425 430
Ala Leu Met Val Ala Ala Arg Lys Gln
435 440

<210> 273
<211> 194
<212> PRT
<213> E. Coli

<400> 273
Met Leu Met Ser Ile Gln Asn Glu Met Pro Gly Tyr Asn Glu Met Asn
1 5 10 15
Gln Tyr Leu Asn Gln Gln Gly Thr Gly Leu Thr Pro Ala Glu Met His
20 25 30
Gly Leu Ile Ser Gly Met Ile Cys Gly Gly Asn Asp Asp Ser Ser Trp
35 40 45
Leu Pro Leu Leu His Asp Leu Thr Asn Glu Gly Met Ala Phe Gly His

```
    50                  55                  60
Glu Leu Ala Gln Ala Leu Arg Lys Met His Ser Ala Thr Ser Asp Ala
65                  70                  75                  80
Leu Gln Asp Asp Gly Phe Leu Phe Gln Leu Tyr Leu Pro Asp Gly Asp
                85                  90                  95
Asp Val Ser Val Phe Asp Arg Ala Asp Ala Leu Ala Gly Trp Val Asn
            100                 105                 110
His Phe Leu Leu Gly Leu Gly Val Thr Gln Pro Lys Leu Asp Lys Val
        115                 120                 125
Thr Gly Glu Thr Gly Glu Ala Ile Asp Asp Leu Arg Asn Ile Ala Gln
    130                 135                 140
Leu Gly Tyr Asp Glu Asp Glu Asp Gln Glu Glu Leu Glu Met Ser Leu
145                 150                 155                 160
Glu Glu Ile Ile Glu Tyr Val Arg Val Ala Ala Leu Leu Cys His Asp
                165                 170                 175
Thr Phe Thr His Pro Gln Pro Thr Ala Pro Glu Val Gln Lys Pro Thr
            180                 185                 190
Leu His
```

<210> 274
<211> 120
<212> PRT
<213> E. Coli

<400> 274

```
Met Leu Lys Leu Phe Ala Lys Tyr Thr Ser Ile Gly Val Leu Asn Thr
 1               5                  10                  15
Leu Ile His Trp Val Val Phe Gly Val Cys Ile Tyr Val Ala His Thr
            20                  25                  30
Asn Gln Ala Leu Ala Asn Phe Ala Gly Phe Val Val Ala Val Ser Phe
        35                  40                  45
Ser Phe Phe Ala Asn Ala Lys Phe Thr Phe Lys Ala Ser Thr Thr Thr
    50                  55                  60
Met Arg Tyr Met Leu Tyr Val Gly Phe Met Gly Thr Leu Ser Ala Thr
65                  70                  75                  80
Val Gly Trp Ala Ala Asp Arg Cys Ala Leu Pro Pro Met Ile Thr Leu
                85                  90                  95
Val Thr Phe Ser Ala Ile Ser Leu Val Cys Gly Phe Val Tyr Ser Lys
            100                 105                 110
Phe Ile Val Phe Arg Asp Ala Lys
        115                 120
```

<210> 275
<211> 306
<212> PRT
<213> E. Coli

<400> 275

```
Met Lys Ile Ser Leu Val Val Pro Val Phe Asn Glu Glu Glu Ala Ile
 1               5                  10                  15
Pro Ile Phe Tyr Lys Thr Val Arg Glu Phe Glu Glu Leu Lys Ser Tyr
            20                  25                  30
Glu Val Glu Ile Val Phe Ile Asn Asp Gly Ser Lys Asp Ala Thr Glu
        35                  40                  45
Ser Ile Ile Asn Ala Leu Ala Val Ser Asp Pro Leu Val Val Pro Leu
```

50 55 60
Ser Phe Thr Arg Asn Phe Gly Lys Glu Pro Ala Leu Phe Ala Gly Leu
65 70 75 80
Asp His Ala Thr Gly Asp Ala Ile Ile Pro Ile Asp Val Asp Leu Gln
85 90 95
Asp Pro Ile Glu Val Ile Pro His Leu Ile Glu Lys Trp Gln Ala Gly
100 105 110
Ala Asp Met Val Leu Ala Lys Arg Ser Asp Arg Ser Thr Asp Gly Arg
115 120 125
Leu Lys Arg Lys Thr Ala Glu Trp Phe Tyr Lys Leu His Asn Lys Ile
130 135 140
Ser Asn Pro Lys Ile Glu Glu Asn Val Gly Asp Phe Arg Leu Met Ser
145 150 155 160
Arg Asp Val Val Glu Asn Ile Lys Leu Met Pro Glu Arg Asn Leu Phe
165 170 175
Met Lys Gly Ile Leu Ser Trp Val Gly Gly Lys Thr Asp Ile Val Glu
180 185 190
Tyr Val Arg Ala Glu Arg Ile Ala Gly Asp Thr Lys Phe Asn Gly Trp
195 200 205
Lys Leu Trp Asn Leu Ala Leu Glu Gly Ile Thr Ser Phe Ser Thr Phe
210 215 220
Pro Leu Arg Ile Trp Thr Tyr Ile Gly Leu Val Val Ala Ser Val Ala
225 230 235 240
Phe Ile Tyr Gly Ala Trp Met Ile Leu Asp Thr Ile Ile Phe Gly Asn
245 250 255
Ala Val Arg Gly Tyr Pro Ser Leu Leu Val Ser Ile Leu Phe Leu Gly
260 265 270
Gly Ile Gln Met Ile Gly Ile Gly Val Leu Gly Glu Tyr Ile Gly Arg
275 280 285
Thr Tyr Ile Glu Thr Lys Lys Arg Pro Lys Tyr Ile Ile Lys Arg Val
290 295 300
Lys Lys
305

<210> 276
<211> 443
<212> PRT
<213> E. Coli

<400> 276
Met Asn Lys Ala Ile Lys Val Ser Leu Tyr Ile Ser Phe Val Leu Ile
1 5 10 15
Ile Cys Ala Leu Ser Lys Asn Ile Met Met Leu Asn Thr Ser Asp Phe
20 25 30
Gly Arg Ala Ile Lys Pro Leu Ile Glu Asp Ile Pro Ala Phe Thr Tyr
35 40 45
Asp Leu Pro Leu Leu Tyr Lys Leu Lys Gly His Ile Asp Ser Ile Asp
50 55 60
Ser Tyr Glu Tyr Ile Ser Ser Tyr Ser Tyr Ile Leu Tyr Thr Tyr Val
65 70 75 80
Leu Phe Ile Ser Ile Phe Thr Glu Tyr Leu Asp Ala Arg Val Leu Ser
85 90 95
Leu Phe Leu Lys Val Ile Tyr Ile Tyr Ser Leu Tyr Ala Ile Phe Thr
100 105 110
Ser Tyr Ile Lys Thr Glu Arg Tyr Val Thr Leu Phe Thr Phe Phe Ile
115 120 125

```
Leu Ala Phe Leu Met Cys Ser Ser Ser Thr Leu Ser Met Phe Ala Ser
    130                 135                 140
Phe Tyr Gln Glu Gln Ile Val Ile Ile Phe Leu Pro Phe Leu Val Tyr
145                 150                 155                 160
Ser Leu Thr Cys Lys Asn Asn Lys Ser Met Leu Leu Leu Phe Phe Ser
                165                 170                 175
Leu Leu Ile Ile Ser Thr Ala Lys Asn Gln Phe Ile Leu Thr Pro Leu
            180                 185                 190
Ile Val Tyr Ser Tyr Tyr Ile Phe Phe Asp Arg His Lys Leu Ile Ile
        195                 200                 205
Lys Ser Val Ile Cys Val Val Cys Leu Leu Ala Ser Ile Phe Ala Ile
    210                 215                 220
Ser Tyr Ser Lys Gly Val Val Glu Leu Asn Lys Tyr His Ala Thr Tyr
225                 230                 235                 240
Phe Gly Ser Tyr Leu Tyr Met Lys Asn Asn Gly Tyr Lys Met Pro Ser
                245                 250                 255
Tyr Val Asp Asp Lys Cys Val Gly Leu Asp Ala Trp Gly Asn Lys Phe
            260                 265                 270
Asp Ile Ser Phe Gly Ala Thr Pro Thr Glu Val Gly Thr Glu Cys Phe
        275                 280                 285
Glu Ser His Lys Asp Glu Thr Phe Ser Asn Ala Leu Phe Leu Leu Val
    290                 295                 300
Ser Lys Pro Ser Thr Ile Phe Lys Leu Pro Phe Asp Asp Gly Val Met
305                 310                 315                 320
Ser Gln Tyr Lys Glu Asn Tyr Phe His Val Tyr Lys Lys Leu His Val
                325                 330                 335
Ile Tyr Gly Glu Ser Asn Ile Leu Thr Thr Ile Thr Asn Ile Lys Asp
            340                 345                 350
Asn Ile Phe Lys Asn Ile Arg Phe Ile Ser Leu Leu Leu Phe Phe Ile
        355                 360                 365
Ala Ser Ile Phe Ile Arg Asn Asn Lys Ile Lys Ala Ser Leu Phe Val
    370                 375                 380
Val Ser Leu Phe Gly Ile Ser Gln Phe Tyr Val Ser Phe Phe Gly Glu
385                 390                 395                 400
Gly Tyr Arg Asp Leu Ser Lys His Leu Phe Gly Met Tyr Phe Ser Phe
                405                 410                 415
Asp Leu Cys Leu Tyr Ile Thr Val Val Phe Leu Ile Tyr Lys Ile Ile
            420                 425                 430
Gln Arg Asn Gln Asp Asn Ser Asp Val Lys His
        435                 440
```

<210> 277
<211> 82
<212> PRT
<213> E. Coli

<400> 277

```
Met Gly Ile Leu Ser Trp Ile Ile Phe Gly Leu Ile Ala Gly Ile Leu
 1               5                  10                  15
Ala Lys Trp Ile Met Pro Gly Lys Asp Gly Gly Gly Phe Phe Met Thr
            20                  25                  30
Ile Leu Leu Gly Ile Val Gly Ala Val Val Gly Gly Trp Ile Ser Thr
        35                  40                  45
Leu Phe Gly Phe Gly Lys Val Asp Gly Phe Asn Phe Gly Ser Phe Val
    50                  55                  60
```

```
Val Ala Val Ile Gly Ala Ile Val Val Leu Phe Ile Tyr Arg Lys Ile
65                  70                  75                  80
Lys Ser
```

<210> 278
<211> 60
<212> PRT
<213> E. Coli

<400> 278

```
Met Gly Lys Ala Thr Tyr Thr Val Thr Val Thr Asn Asn Ser Asn Gly
 1               5                  10                  15
Val Ser Val Asp Tyr Glu Thr Glu Thr Pro Met Thr Leu Leu Val Pro
            20                  25                  30
Glu Val Ala Ala Glu Val Ile Lys Asp Leu Val Asn Thr Val Arg Ser
        35                  40                  45
Tyr Asp Thr Glu Asn Glu His Asp Val Cys Gly Trp
    50                  55                  60
```

<210> 279
<211> 119
<212> PRT
<213> E. Coli

<400> 279

```
Met Leu Gln Ile Pro Gln Asn Tyr Ile His Thr Arg Ser Thr Pro Phe
 1               5                  10                  15
Trp Asn Lys Gln Thr Ala Pro Ala Gly Ile Phe Glu Arg His Leu Asp
            20                  25                  30
Lys Gly Thr Arg Pro Gly Val Tyr Pro Arg Leu Ser Val Met His Gly
        35                  40                  45
Ala Val Lys Tyr Leu Gly Tyr Ala Asp Glu His Ser Ala Glu Pro Asp
    50                  55                  60
Gln Val Ile Leu Ile Glu Ala Gly Gln Phe Ala Val Phe Pro Pro Glu
65                  70                  75                  80
Lys Trp His Asn Ile Glu Ala Met Thr Asp Asp Thr Tyr Phe Asn Ile
                85                  90                  95
Asp Phe Phe Val Ala Pro Glu Val Leu Met Glu Gly Ala Gln Gln Arg
            100                 105                 110
Lys Val Ile His Asn Gly Lys
        115
```

<210> 280
<211> 246
<212> PRT
<213> E. Coli

<400> 280

```
Met Lys Phe Lys Val Ile Ala Leu Ala Ala Leu Met Gly Ile Ser Gly
 1               5                  10                  15
Met Ala Ala Gln Ala Asn Glu Leu Pro Asp Gly Pro His Ile Val Thr
            20                  25                  30
Ser Gly Thr Ala Ser Val Asp Ala Val Pro Asp Ile Ala Thr Leu Ala
```

```
        35                  40                  45
Ile Glu Val Asn Val Ala Ala Lys Asp Ala Ala Thr Ala Lys Lys Gln
    50                  55                  60
Ala Asp Glu Arg Val Ala Gln Tyr Ile Ser Phe Leu Glu Leu Asn Gln
65                  70                  75                  80
Ile Ala Lys Lys Asp Ile Ser Ser Ala Asn Leu Arg Thr Gln Pro Asp
                85                  90                  95
Tyr Asp Tyr Gln Asp Gly Lys Ser Ile Leu Lys Gly Tyr Arg Ala Val
            100                 105                 110
Arg Thr Val Glu Val Thr Leu Arg Gln Leu Asp Lys Leu Asn Ser Leu
        115                 120                 125
Leu Asp Gly Ala Leu Lys Ala Gly Leu Asn Glu Ile Arg Ser Val Ser
    130                 135                 140
Leu Gly Val Ala Gln Pro Asp Ala Tyr Lys Asp Lys Ala Arg Lys Ala
145                 150                 155                 160
Ala Ile Asp Asn Ala Ile His Gln Ala Gln Glu Leu Ala Asn Gly Phe
                165                 170                 175
His Arg Lys Leu Gly Pro Val Tyr Ser Val Arg Tyr His Val Ser Asn
            180                 185                 190
Tyr Gln Pro Ser Pro Met Val Arg Met Met Lys Ala Asp Ala Ala Pro
        195                 200                 205
Val Ser Ala Gln Glu Thr Tyr Glu Gln Ala Ala Ile Gln Phe Asp Asp
    210                 215                 220
Gln Val Asp Val Val Phe Gln Leu Glu Pro Val Asp Gln Gln Pro Ala
225                 230                 235                 240
Lys Thr Pro Ala Ala Gln
                245
```

<210> 281
<211> 464
<212> PRT
<213> E. Coli

<400> 281

```
Met Leu Leu Leu Asp Ala Cys Ser Gln Met Cys Pro Ser Phe Arg Arg
 1               5                  10                  15
Phe Gln Thr Val Phe His Asn Ser Ser Ile Phe Leu Pro Tyr Trp Leu
            20                  25                  30
Ala Thr Leu Val Ser Phe Arg Glu Thr Phe Gln Glu Glu Lys Leu Leu
        35                  40                  45
Thr Met Lys Gly Ser Tyr Lys Ser Arg Trp Val Ile Val Ile Val Val
    50                  55                  60
Val Ile Ala Ala Ile Ala Ala Phe Trp Phe Trp Gln Gly Arg Asn Asp
65                  70                  75                  80
Ser Arg Ser Ala Ala Pro Gly Ala Thr Lys Gln Ala Gln Gln Ser Pro
                85                  90                  95
Ala Gly Gly Arg Arg Gly Met Arg Ser Gly Pro Leu Ala Pro Val Gln
            100                 105                 110
Ala Ala Thr Ala Val Glu Gln Ala Val Pro Arg Tyr Leu Thr Gly Leu
        115                 120                 125
Gly Thr Ile Thr Ala Ala Asn Thr Val Thr Val Arg Ser Arg Val Asp
    130                 135                 140
Gly Gln Leu Ile Ala Leu His Phe Gln Glu Gly Gln Gln Val Lys Ala
145                 150                 155                 160
Gly Asp Leu Leu Ala Glu Ile Asp Pro Ser Gln Phe Lys Val Ala Leu
                165                 170                 175
```

```
Ala Gln Ala Gln Gly Gln Leu Ala Lys Asp Lys Ala Thr Leu Ala Asn
            180                 185                 190
Ala Arg Arg Asp Leu Ala Arg Tyr Gln Gln Leu Ala Lys Thr Asn Leu
        195                 200                 205
Val Ser Arg Gln Glu Leu Asp Ala Gln Gln Ala Leu Val Ser Glu Thr
    210                 215                 220
Glu Gly Thr Ile Lys Ala Asp Glu Ala Ser Val Ala Ser Ala Gln Leu
225                 230                 235                 240
Gln Leu Asp Trp Ser Arg Ile Thr Ala Pro Val Asp Gly Arg Val Gly
                245                 250                 255
Leu Lys Gln Val Asp Val Gly Asn Gln Ile Ser Ser Gly Asp Thr Thr
            260                 265                 270
Gly Ile Val Val Ile Thr Gln Thr His Pro Ile Asp Leu Val Phe Thr
        275                 280                 285
Leu Pro Glu Ser Asp Ile Ala Thr Val Val Gln Ala Gln Lys Ala Gly
    290                 295                 300
Lys Pro Leu Val Val Glu Ala Trp Asp Arg Thr Asn Ser Lys Lys Leu
305                 310                 315                 320
Ser Glu Gly Thr Leu Leu Ser Leu Asp Asn Gln Ile Asp Ala Thr Thr
                325                 330                 335
Gly Thr Ile Lys Val Lys Ala Arg Phe Asn Asn Gln Asp Asp Ala Leu
            340                 345                 350
Phe Pro Asn Gln Phe Val Asn Ala Arg Met Leu Val Asp Thr Glu Gln
        355                 360                 365
Asn Ala Val Val Ile Pro Thr Ala Ala Leu Gln Met Gly Asn Glu Gly
    370                 375                 380
His Phe Val Trp Val Leu Asn Ser Glu Asn Lys Val Ser Lys His Leu
385                 390                 395                 400
Val Thr Pro Gly Ile Gln Asp Ser Gln Lys Val Val Ile Arg Ala Gly
                405                 410                 415
Ile Ser Ala Gly Asp Arg Val Val Thr Asp Gly Ile Asp Arg Leu Thr
            420                 425                 430
Glu Gly Ala Lys Val Glu Val Val Glu Ala Gln Ser Ala Thr Thr Pro
        435                 440                 445
Glu Glu Lys Ala Thr Ser Arg Glu Tyr Ala Lys Lys Gly Ala Arg Ser
    450                 455                 460
```


<210> 282
<211> 1040
<212> PRT
<213> E. Coli

<400> 282

```
Met Gln Val Leu Pro Pro Ser Ser Thr Gly Gly Pro Ser Arg Leu Phe
 1               5                  10                  15
Ile Met Arg Pro Val Ala Thr Thr Leu Leu Met Val Ala Ile Leu Leu
            20                  25                  30
Ala Gly Ile Ile Gly Tyr Arg Ala Leu Pro Val Ser Ala Leu Pro Glu
        35                  40                  45
Val Asp Tyr Pro Thr Ile Gln Val Val Thr Leu Tyr Pro Gly Ala Ser
    50                  55                  60
Pro Asp Val Met Thr Ser Ala Val Thr Ala Pro Leu Glu Arg Gln Phe
65                  70                  75                  80
Gly Gln Met Ser Gly Leu Lys Gln Met Ser Ser Gln Ser Ser Gly Gly
                85                  90                  95
Ala Ser Val Ile Thr Leu Gln Phe Gln Leu Thr Leu Pro Leu Asp Val
```

```
            100                 105                 110
Ala Glu Gln Glu Val Gln Ala Ala Ile Asn Ala Ala Thr Asn Leu Leu
        115                 120                 125
Pro Ser Asp Leu Pro Asn Pro Pro Val Tyr Ser Lys Val Asn Pro Ala
    130                 135                 140
Asp Pro Pro Ile Met Thr Leu Ala Val Thr Ser Thr Ala Met Pro Met
145                 150                 155                 160
Thr Gln Val Glu Asp Met Val Glu Thr Arg Val Ala Gln Lys Ile Ser
                165                 170                 175
Gln Ile Ser Gly Val Gly Leu Val Thr Leu Ser Gly Gly Gln Arg Pro
            180                 185                 190
Ala Val Arg Val Lys Leu Asn Ala Gln Ala Ile Ala Ala Leu Gly Leu
        195                 200                 205
Thr Ser Glu Thr Val Arg Thr Ala Ile Thr Gly Ala Asn Val Asn Ser
    210                 215                 220
Ala Lys Gly Ser Leu Asp Gly Pro Ser Arg Ala Val Thr Leu Ser Ala
225                 230                 235                 240
Asn Asp Gln Met Gln Ser Ala Glu Glu Tyr Arg Gln Leu Ile Ile Ala
                245                 250                 255
Tyr Gln Asn Gly Ala Pro Ile Arg Leu Gly Asp Val Ala Thr Val Glu
            260                 265                 270
Gln Gly Ala Glu Asn Ser Trp Leu Gly Ala Trp Ala Asn Lys Glu Gln
        275                 280                 285
Ala Ile Val Met Asn Val Gln Arg Gln Pro Gly Ala Asn Ile Ile Ser
    290                 295                 300
Thr Ala Asp Ser Ile Arg Gln Met Leu Pro Gln Leu Thr Glu Ser Leu
305                 310                 315                 320
Pro Lys Ser Val Lys Val Thr Val Leu Ser Asp Arg Thr Thr Asn Ile
                325                 330                 335
Arg Ala Ser Val Asp Asp Thr Gln Phe Glu Leu Met Met Ala Ile Ala
            340                 345                 350
Leu Val Val Met Ile Ile Tyr Leu Phe Leu Arg Asn Ile Pro Ala Thr
        355                 360                 365
Ile Ile Pro Gly Val Ala Val Pro Leu Ser Leu Ile Gly Thr Phe Ala
    370                 375                 380
Val Met Val Phe Leu Asp Phe Ser Ile Asn Asn Leu Thr Leu Met Ala
385                 390                 395                 400
Leu Thr Ile Ala Thr Gly Phe Val Val Asp Asp Ala Ile Val Val Ile
                405                 410                 415
Glu Asn Ile Ser Arg Tyr Ile Glu Lys Gly Glu Lys Pro Leu Ala Ala
            420                 425                 430
Ala Leu Lys Gly Ala Gly Glu Ile Gly Phe Thr Ile Ile Ser Leu Thr
        435                 440                 445
Phe Ser Leu Ile Ala Val Leu Ile Pro Leu Leu Phe Met Gly Asp Ile
    450                 455                 460
Val Gly Arg Leu Phe Arg Glu Phe Ala Ile Thr Leu Ala Val Ala Ile
465                 470                 475                 480
Leu Ile Ser Ala Val Val Ser Leu Thr Leu Thr Pro Met Met Cys Ala
                485                 490                 495
Arg Met Leu Ser Gln Glu Ser Leu Arg Lys Gln Asn Arg Phe Ser Arg
            500                 505                 510
Ala Ser Glu Lys Met Phe Asp Arg Ile Ile Ala Ala Tyr Gly Arg Gly
        515                 520                 525
Leu Ala Lys Val Leu Asn His Pro Trp Leu Thr Leu Ser Val Ala Leu
    530                 535                 540
Ser Thr Leu Leu Leu Ser Val Leu Leu Trp Val Phe Ile Pro Lys Gly
545                 550                 555                 560
```

Phe Phe Pro Val Gln Asp Asn Gly Ile Ile Gln Gly Thr Leu Gln Ala
565 570 575
Pro Gln Ser Ser Ser Phe Ala Asn Met Ala Gln Arg Gln Arg Gln Val
580 585 590
Ala Asp Val Ile Leu Gln Asp Pro Ala Val Gln Ser Leu Thr Ser Phe
595 600 605
Val Gly Val Asp Gly Thr Asn Pro Ser Leu Asn Ser Ala Arg Leu Gln
610 615 620
Ile Asn Leu Lys Pro Leu Asp Glu Arg Asp Asp Arg Val Gln Lys Val
625 630 635 640
Ile Ala Arg Leu Gln Thr Ala Val Asp Lys Val Pro Gly Val Asp Leu
645 650 655
Phe Leu Gln Pro Thr Gln Asp Leu Thr Ile Asp Thr Gln Val Ser Arg
660 665 670
Thr Gln Tyr Gln Phe Thr Leu Gln Ala Thr Ser Leu Asp Ala Leu Ser
675 680 685
Thr Trp Val Pro Gln Leu Met Glu Lys Leu Gln Gln Leu Pro Gln Leu
690 695 700
Ser Asp Val Ser Ser Asp Trp Gln Asp Lys Gly Leu Val Ala Tyr Val
705 710 715 720
Asn Val Asp Arg Asp Ser Ala Ser Arg Leu Gly Ile Ser Met Ala Asp
725 730 735
Val Asp Asn Ala Leu Tyr Asn Ala Phe Gly Gln Arg Leu Ile Ser Thr
740 745 750
Ile Tyr Thr Gln Ala Asn Gln Tyr Arg Val Val Leu Glu His Asn Thr
755 760 765
Glu Asn Thr Pro Gly Leu Ala Ala Leu Asp Thr Ile Arg Leu Thr Ser
770 775 780
Ser Asp Gly Gly Val Val Pro Leu Ser Ser Ile Ala Lys Ile Glu Gln
785 790 795 800
Arg Phe Ala Pro Leu Ser Ile Asn His Leu Asp Gln Phe Pro Val Thr
805 810 815
Thr Ile Ser Phe Asn Val Pro Asp Asn Tyr Ser Leu Gly Asp Ala Val
820 825 830
Gln Ala Ile Met Asp Thr Glu Lys Thr Leu Asn Leu Pro Val Asp Ile
835 840 845
Thr Thr Gln Phe Gln Gly Ser Thr Leu Ala Phe Gln Ser Ala Leu Gly
850 855 860
Ser Thr Val Trp Leu Ile Val Ala Ala Val Val Ala Met Tyr Ile Val
865 870 875 880
Leu Gly Ile Leu Tyr Glu Ser Phe Ile His Pro Ile Thr Ile Leu Ser
885 890 895
Thr Leu Pro Thr Ala Gly Val Gly Ala Leu Leu Ala Leu Leu Ile Ala
900 905 910
Gly Ser Glu Leu Asp Val Ile Ala Ile Ile Gly Ile Ile Leu Leu Ile
915 920 925
Gly Ile Val Lys Lys Asn Ala Ile Met Met Ile Asp Phe Ala Leu Ala
930 935 940
Ala Glu Arg Glu Gln Gly Met Ser Pro Arg Glu Ala Ile Tyr Gln Ala
945 950 955 960
Cys Leu Leu Arg Phe Arg Pro Ile Leu Met Thr Thr Leu Ala Ala Leu
965 970 975
Leu Gly Ala Leu Pro Leu Met Leu Ser Thr Gly Val Gly Ala Glu Leu
980 985 990
Arg Arg Pro Leu Gly Ile Gly Met Val Gly Gly Leu Ile Val Ser Gln
995 1000 1005
Val Leu Thr Leu Phe Thr Thr Pro Val Ile Tyr Leu Leu Phe Asp Arg

```
    1010                1015                1020
Leu Ala Leu Trp Thr Lys Ser Arg Phe Ala Arg His Glu Glu Glu Ala
1025                1030                1035                1040
```

<210> 283
<211> 1025
<212> PRT
<213> E. Coli

<400> 283

```
Met Lys Phe Phe Ala Leu Phe Ile Tyr Arg Pro Val Ala Thr Ile Leu
 1               5                  10                  15
Leu Ser Val Ala Ile Thr Leu Cys Gly Ile Leu Gly Phe Arg Met Leu
            20                  25                  30
Pro Val Ala Pro Leu Pro Gln Val Asp Phe Pro Val Ile Ile Val Ser
        35                  40                  45
Ala Ser Leu Pro Gly Ala Ser Pro Glu Thr Met Ala Ser Ser Val Ala
    50                  55                  60
Thr Pro Leu Glu Arg Ser Leu Gly Arg Ile Ala Gly Val Ser Glu Met
65                  70                  75                  80
Thr Ser Ser Ser Ser Leu Gly Ser Thr Arg Ile Ile Leu Gln Phe Asp
                85                  90                  95
Phe Asp Arg Asp Ile Asn Gly Ala Ala Arg Asp Val Gln Ala Ala Ile
            100                 105                 110
Asn Ala Ala Gln Ser Leu Leu Pro Ser Gly Met Pro Ser Arg Pro Thr
        115                 120                 125
Tyr Arg Lys Ala Asn Pro Ser Asp Ala Pro Ile Met Ile Leu Thr Leu
    130                 135                 140
Thr Ser Asp Thr Tyr Ser Gln Gly Glu Leu Tyr Asp Phe Ala Ser Thr
145                 150                 155                 160
Gln Leu Ala Pro Thr Ile Ser Gln Ile Asp Gly Val Gly Asp Val Asp
                165                 170                 175
Val Gly Gly Ser Ser Leu Pro Ala Val Arg Val Gly Leu Asn Pro Gln
            180                 185                 190
Ala Leu Phe Asn Gln Gly Val Ser Leu Asp Asp Val Arg Thr Ala Val
        195                 200                 205
Ser Asn Ala Asn Val Arg Lys Pro Gln Gly Ala Leu Glu Asp Gly Thr
    210                 215                 220
His Arg Trp Gln Ile Gln Thr Asn Asp Glu Leu Lys Thr Ala Ala Glu
225                 230                 235                 240
Tyr Gln Pro Leu Ile Ile His Tyr Asn Asn Gly Gly Ala Val Arg Leu
                245                 250                 255
Gly Asp Val Ala Thr Val Thr Asp Ser Val Gln Asp Val Arg Asn Ala
            260                 265                 270
Gly Met Thr Asn Ala Lys Pro Ala Ile Leu Leu Met Ile Arg Lys Leu
        275                 280                 285
Pro Glu Ala Asn Ile Ile Gln Thr Val Asp Ser Ile Arg Ala Lys Leu
    290                 295                 300
Pro Glu Leu Gln Glu Thr Ile Pro Ala Ala Ile Asp Leu Gln Ile Ala
305                 310                 315                 320
Gln Asp Arg Ser Pro Thr Ile Arg Ala Ser Leu Glu Glu Val Glu Gln
                325                 330                 335
Thr Leu Ile Ile Ser Val Ala Leu Val Ile Leu Val Val Phe Leu Phe
            340                 345                 350
Leu Arg Ser Gly Arg Ala Thr Ile Ile Pro Ala Val Ser Val Pro Val
        355                 360                 365
```

Ser Leu Ile Gly Thr Phe Ala Ala Met Tyr Leu Cys Gly Phe Ser Leu
370 375 380
Asn Asn Leu Ser Leu Met Ala Leu Thr Ile Ala Thr Gly Phe Val Val
385 390 395 400
Asp Asp Ala Ile Val Val Leu Glu Asn Ile Ala Arg His Leu Glu Ala
405 410 415
Gly Met Lys Pro Leu Gln Ala Ala Leu Gln Gly Thr Arg Glu Val Gly
420 425 430
Phe Thr Val Leu Ser Met Ser Leu Ser Leu Val Ala Val Phe Leu Pro
435 440 445
Leu Leu Leu Met Gly Gly Leu Pro Gly Arg Leu Leu Arg Glu Phe Ala
450 455 460
Val Thr Leu Ser Val Ala Ile Gly Ile Ser Leu Leu Val Ser Leu Thr
465 470 475 480
Leu Thr Pro Met Met Cys Gly Trp Met Leu Lys Ala Ser Lys Pro Arg
485 490 495
Glu Gln Lys Arg Leu Arg Gly Phe Gly Arg Met Leu Val Ala Leu Gln
500 505 510
Gln Gly Tyr Gly Lys Ser Leu Lys Trp Val Leu Asn His Thr Arg Leu
515 520 525
Val Gly Val Val Leu Leu Gly Thr Ile Ala Leu Asn Ile Trp Leu Tyr
530 535 540
Ile Ser Ile Pro Lys Thr Phe Phe Pro Glu Gln Asp Thr Gly Val Leu
545 550 555 560
Met Gly Gly Ile Gln Ala Asp Gln Ser Ile Ser Phe Gln Ala Met Arg
565 570 575
Gly Lys Leu Gln Asp Phe Met Lys Ile Ile Arg Asp Asp Pro Ala Val
580 585 590
Asp Asn Val Thr Gly Phe Thr Gly Gly Ser Arg Val Asn Ser Gly Met
595 600 605
Met Phe Ile Thr Leu Lys Pro Arg Asp Glu Arg Ser Glu Thr Ala Gln
610 615 620
Gln Ile Ile Asp Arg Leu Arg Val Lys Leu Ala Lys Glu Pro Gly Ala
625 630 635 640
Asn Leu Phe Leu Met Ala Val Gln Asp Ile Arg Val Gly Gly Arg Gln
645 650 655
Ser Asn Ala Ser Tyr Gln Tyr Thr Leu Leu Ser Asp Asp Leu Ala Ala
660 665 670
Leu Arg Glu Trp Glu Pro Lys Ile Arg Lys Lys Leu Ala Thr Leu Pro
675 680 685
Glu Leu Ala Asp Val Asn Ser Asp Gln Gln Asp Asn Gly Ala Glu Met
690 695 700
Asn Leu Val Tyr Asp Arg Asp Thr Met Ala Arg Leu Gly Ile Asp Val
705 710 715 720
Gln Ala Ala Asn Ser Leu Leu Asn Asn Ala Phe Gly Gln Arg Gln Ile
725 730 735
Ser Thr Ile Tyr Gln Pro Met Asn Gln Tyr Lys Val Val Met Glu Val
740 745 750
Asp Pro Arg Tyr Thr Gln Asp Ile Ser Ala Leu Glu Lys Met Phe Val
755 760 765
Ile Asn Asn Glu Gly Lys Ala Ile Pro Leu Ser Tyr Phe Ala Lys Trp
770 775 780
Gln Pro Ala Asn Ala Pro Leu Ser Val Asn His Gln Gly Leu Ser Ala
785 790 795 800
Ala Ser Thr Ile Ser Phe Asn Leu Pro Thr Gly Lys Ser Leu Ser Asp
805 810 815
Ala Ser Ala Ala Ile Asp Arg Ala Met Thr Gln Leu Gly Val Pro Ser

```
            820                 825                 830
Thr Val Arg Gly Ser Phe Ala Gly Thr Ala Gln Val Phe Gln Glu Thr
        835                 840                 845
Met Asn Ser Gln Val Ile Leu Ile Ile Ala Ala Ile Ala Thr Val Tyr
    850                 855                 860
Ile Val Leu Gly Ile Leu Tyr Glu Ser Tyr Val His Pro Leu Thr Ile
865                 870                 875                 880
Leu Ser Thr Leu Pro Ser Ala Gly Val Gly Ala Leu Leu Ala Leu Glu
                885                 890                 895
Leu Phe Asn Ala Pro Phe Ser Leu Ile Ala Leu Ile Gly Ile Met Leu
            900                 905                 910
Leu Ile Gly Ile Val Lys Lys Asn Ala Ile Met Met Val Asp Phe Ala
        915                 920                 925
Leu Glu Ala Gln Arg His Gly Asn Leu Thr Pro Gln Glu Ala Ile Phe
    930                 935                 940
Gln Ala Cys Leu Leu Arg Phe Arg Pro Ile Met Met Thr Thr Leu Ala
945                 950                 955                 960
Ala Leu Phe Gly Ala Leu Pro Leu Val Leu Ser Gly Gly Asp Gly Ser
                965                 970                 975
Glu Leu Arg Gln Pro Leu Gly Ile Thr Ile Val Gly Gly Leu Val Met
            980                 985                 990
Ser Gln Leu Leu Thr Leu Tyr Thr Thr Pro Val Val Tyr Leu Phe Phe
        995                 1000                1005
Asp Arg Leu Arg Leu Arg Phe Ser Arg Lys Pro Lys Gln Thr Val Thr
    1010                1015                1020
Glu
1025
```

<210> 284
<211> 471
<212> PRT
<213> E. Coli

<400> 284

```
Met Thr Asp Leu Pro Asp Ser Thr Arg Trp Gln Leu Trp Ile Val Ala
 1               5                  10                  15
Phe Gly Phe Phe Met Gln Ser Leu Asp Thr Thr Ile Val Asn Thr Ala
            20                  25                  30
Leu Pro Ser Met Ala Gln Ser Leu Gly Glu Ser Pro Leu His Met His
        35                  40                  45
Met Val Ile Val Ser Tyr Val Leu Thr Val Ala Val Met Leu Pro Ala
    50                  55                  60
Ser Gly Trp Leu Ala Asp Lys Val Gly Val Arg Asn Ile Phe Phe Thr
65                  70                  75                  80
Ala Ile Val Leu Phe Thr Leu Gly Ser Leu Phe Cys Ala Leu Ser Gly
                85                  90                  95
Thr Leu Asn Glu Leu Leu Leu Ala Arg Ala Leu Gln Gly Val Gly Gly
            100                 105                 110
Ala Met Met Val Pro Val Gly Arg Leu Thr Val Met Lys Ile Val Pro
        115                 120                 125
Arg Glu Gln Tyr Met Ala Ala Met Thr Phe Val Thr Leu Pro Gly Gln
    130                 135                 140
Val Gly Pro Leu Leu Gly Pro Ala Leu Gly Gly Leu Leu Val Glu Tyr
145                 150                 155                 160
Ala Ser Trp His Trp Ile Phe Leu Ile Asn Ile Pro Val Gly Ile Ile
                165                 170                 175
```

Gly Ala Ile Ala Thr Leu Leu Leu Met Pro Asn Tyr Thr Met Gln Thr
180 185 190
Arg Arg Phe Asp Leu Ser Gly Phe Leu Leu Leu Ala Val Gly Met Ala
195 200 205
Val Leu Thr Leu Ala Leu Asp Gly Ser Lys Gly Thr Gly Leu Ser Pro
210 215 220
Leu Thr Ile Ala Gly Leu Val Ala Val Gly Val Val Ala Leu Val Leu
225 230 235 240
Tyr Leu Leu His Ala Arg Asn Asn Asn Arg Ala Leu Phe Ser Leu Lys
245 250 255
Leu Phe Arg Thr Arg Thr Phe Ser Leu Gly Leu Ala Gly Ser Phe Ala
260 265 270
Gly Arg Ile Gly Ser Gly Met Leu Pro Phe Met Thr Pro Val Phe Leu
275 280 285
Gln Ile Gly Leu Gly Phe Ser Pro Phe His Ala Gly Leu Met Met Ile
290 295 300
Pro Met Val Leu Gly Ser Met Gly Met Lys Arg Ile Val Val Gln Val
305 310 315 320
Val Asn Arg Phe Gly Tyr Arg Arg Val Leu Val Ala Thr Thr Leu Gly
325 330 335
Leu Ser Leu Val Thr Leu Leu Phe Met Thr Thr Ala Leu Leu Gly Trp
340 345 350
Tyr Tyr Val Leu Pro Phe Val Leu Phe Leu Gln Gly Met Val Asn Ser
355 360 365
Thr Arg Phe Ser Ser Met Asn Thr Leu Thr Leu Lys Asp Leu Pro Asp
370 375 380
Asn Leu Ala Ser Ser Gly Asn Ser Leu Leu Ser Met Ile Met Gln Leu
385 390 395 400
Ser Met Ser Ile Gly Val Thr Ile Ala Gly Leu Leu Leu Gly Leu Phe
405 410 415
Gly Ser Gln His Val Ser Val Asp Ser Gly Thr Thr Gln Thr Val Phe
420 425 430
Met Tyr Thr Trp Leu Ser Met Ala Leu Ile Ile Ala Leu Pro Ala Phe
435 440 445
Ile Phe Ala Arg Val Pro Asn Asp Thr His Gln Asn Val Ala Ile Ser
450 455 460
Arg Arg Lys Arg Ser Ala Gln
465 470

<210> 285
<211> 344
<212> PRT
<213> E. Coli

<400> 285
Met Glu Ile Arg Ile Met Leu Phe Ile Leu Met Met Met Val Met Pro
1 5 10 15
Val Ser Tyr Ala Ala Cys Tyr Ser Glu Leu Ser Val Gln His Asn Leu
20 25 30
Val Val Gln Gly Asp Phe Ala Leu Thr Gln Thr Gln Met Ala Thr Tyr
35 40 45
Glu His Asn Phe Asn Asp Ser Ser Cys Val Ser Thr Asn Thr Ile Thr
50 55 60
Pro Met Ser Pro Ser Asp Ile Ile Val Gly Leu Tyr Asn Asp Thr Ile
65 70 75 80
Lys Leu Asn Leu His Phe Glu Trp Thr Asn Lys Asn Asn Ile Thr Leu

```
                85                  90                  95
Ser Asn Asn Gln Thr Ser Phe Thr Ser Gly Tyr Ser Val Thr Val Thr
            100                 105                 110
Pro Ala Ala Ser Asn Ala Lys Val Asn Val Ser Ala Gly Gly Gly Gly
        115                 120                 125
Ser Val Met Ile Asn Gly Val Ala Thr Leu Ser Ser Ala Ser Ser Ser
    130                 135                 140
Thr Arg Gly Ser Ala Ala Val Gln Phe Leu Leu Cys Leu Leu Gly Gly
145                 150                 155                 160
Lys Ser Trp Asp Ala Cys Val Asn Ser Tyr Arg Asn Ala Leu Ala Gln
                165                 170                 175
Asn Ala Gly Val Tyr Ser Phe Asn Leu Thr Leu Ser Tyr Asn Pro Ile
            180                 185                 190
Thr Thr Thr Cys Lys Pro Asp Asp Leu Leu Ile Thr Leu Asp Ser Ile
        195                 200                 205
Pro Val Ser Gln Leu Pro Ala Thr Gly Asn Lys Ala Thr Ile Asn Ser
    210                 215                 220
Lys Gln Gly Asp Ile Ile Leu Arg Cys Lys Asn Leu Leu Gly Gln Gln
225                 230                 235                 240
Asn Gln Thr Ser Arg Lys Met Gln Val Tyr Leu Ser Ser Ser Asp Leu
                245                 250                 255
Leu Thr Asn Ser Asn Thr Ile Leu Lys Gly Ala Glu Asp Asn Gly Val
            260                 265                 270
Gly Phe Ile Leu Glu Ser Asn Gly Ser Pro Val Thr Leu Leu Asn Ile
        275                 280                 285
Thr Asn Ser Ser Lys Gly Tyr Thr Asn Leu Lys Glu Val Ala Ala Lys
    290                 295                 300
Ser Lys Leu Thr Asp Thr Thr Val Ser Ile Pro Ile Thr Ala Ser Tyr
305                 310                 315                 320
Tyr Val Tyr Asp Thr Asn Lys Val Lys Ser Gly Ala Leu Glu Ala Thr
                325                 330                 335
Ala Leu Ile Asn Val Lys Tyr Asp
            340
```

<210> 286
<211> 826
<212> PRT
<213> E. Coli

<400> 286

```
Met Leu Arg Met Thr Pro Leu Ala Ser Ala Ile Val Ala Leu Leu Leu
 1               5                  10                  15
Gly Ile Glu Ala Tyr Ala Ala Glu Glu Thr Phe Asp Thr His Phe Met
            20                  25                  30
Ile Gly Gly Met Lys Asp Gln Gln Val Ala Asn Ile Arg Leu Asp Asp
        35                  40                  45
Asn Gln Pro Leu Pro Gly Gln Tyr Asp Ile Asp Ile Tyr Val Asn Lys
    50                  55                  60
Gln Trp Arg Gly Lys Tyr Glu Ile Ile Val Lys Asp Asn Pro Gln Glu
65                  70                  75                  80
Thr Cys Leu Ser Arg Glu Val Ile Lys Arg Leu Gly Ile Asn Ser Asp
                85                  90                  95
Asn Phe Ala Ser Gly Lys Gln Cys Leu Thr Phe Glu Gln Leu Val Gln
            100                 105                 110
Gly Gly Ser Tyr Thr Trp Asp Ile Gly Val Phe Arg Leu Asp Phe Ser
        115                 120                 125
```

Val Pro Gln Ala Trp Val Glu Glu Leu Glu Ser Gly Tyr Val Pro Pro
130 135 140
Glu Asn Trp Glu Arg Gly Ile Asn Ala Phe Tyr Thr Ser Tyr Tyr Leu
145 150 155 160
Ser Gln Tyr Tyr Ser Asp Tyr Lys Ala Ser Gly Asn Asn Lys Ser Thr
165 170 175
Tyr Val Arg Phe Asn Ser Gly Leu Asn Leu Leu Gly Trp Gln Leu His
180 185 190
Ser Asp Ala Ser Phe Ser Lys Thr Asn Asn Asn Pro Gly Val Trp Lys
195 200 205
Ser Asn Thr Leu Tyr Leu Glu Arg Gly Phe Ala Gln Leu Leu Gly Thr
210 215 220
Leu Arg Val Gly Asp Met Tyr Thr Ser Ser Asp Ile Phe Asp Ser Val
225 230 235 240
Arg Phe Arg Gly Val Arg Leu Phe Arg Asp Met Gln Met Leu Pro Asn
245 250 255
Ser Lys Gln Asn Phe Thr Pro Arg Val Gln Gly Ile Ala Gln Ser Asn
260 265 270
Ala Leu Val Thr Ile Glu Gln Asn Gly Phe Val Val Tyr Gln Lys Glu
275 280 285
Val Pro Pro Gly Pro Phe Ala Ile Thr Asp Leu Gln Leu Ala Gly Gly
290 295 300
Gly Ala Asp Leu Asp Val Ser Val Lys Glu Ala Asp Gly Ser Val Thr
305 310 315 320
Thr Tyr Leu Val Pro Tyr Ala Ala Val Pro Asn Met Leu Gln Pro Gly
325 330 335
Val Ser Lys Tyr Asp Leu Ala Ala Gly Arg Ser His Ile Glu Gly Ala
340 345 350
Ser Lys Gln Ser Asp Phe Val Gln Ala Gly Tyr Gln Tyr Gly Phe Asn
355 360 365
Asn Leu Leu Thr Leu Tyr Gly Gly Ser Met Val Ala Asn Asn Tyr Tyr
370 375 380
Ala Phe Thr Leu Gly Ala Gly Trp Asn Thr Arg Ile Gly Ala Ile Ser
385 390 395 400
Val Asp Ala Thr Lys Ser His Ser Lys Gln Asp Asn Gly Asp Val Phe
405 410 415
Asp Gly Gln Ser Tyr Gln Ile Ala Tyr Asn Lys Phe Val Ser Gln Thr
420 425 430
Ser Thr Arg Phe Gly Leu Ala Ala Trp Arg Tyr Ser Ser Arg Asp Tyr
435 440 445
Arg Thr Phe Asn Asp His Val Trp Ala Asn Asn Lys Asp Asn Tyr Arg
450 455 460
Arg Asp Glu Asn Asp Val Tyr Asp Ile Ala Asp Tyr Tyr Gln Asn Asp
465 470 475 480
Phe Gly Arg Lys Asn Ser Phe Ser Ala Asn Met Ser Gln Ser Leu Pro
485 490 495
Glu Gly Trp Gly Ser Val Ser Leu Ser Thr Leu Trp Arg Asp Tyr Trp
500 505 510
Gly Arg Ser Gly Ser Ser Lys Asp Tyr Gln Leu Ser Tyr Ser Asn Asn
515 520 525
Leu Arg Arg Ile Ser Tyr Thr Leu Ala Ala Ser Gln Ala Tyr Asp Glu
530 535 540
Asn His His Glu Glu Lys Arg Phe Asn Ile Phe Ile Ser Ile Pro Phe
545 550 555 560
Asp Trp Gly Asp Asp Val Ser Thr Pro Arg Arg Gln Ile Tyr Met Ser
565 570 575
Asn Ser Thr Thr Phe Asp Asp Gln Gly Phe Ala Ser Asn Asn Thr Gly

```
            580                 585                 590
Leu Ser Gly Thr Val Gly Ser Arg Asp Gln Phe Asn Tyr Gly Val Asn
        595                 600                 605
Leu Ser His Gln His Gln Gly Asn Glu Thr Thr Ala Gly Ala Asn Leu
    610                 615                 620
Thr Trp Asn Ala Pro Val Ala Thr Val Asn Gly Ser Tyr Ser Gln Ser
625                 630                 635                 640
Ser Thr Tyr Arg Gln Ala Gly Ala Ser Val Ser Gly Gly Ile Val Ala
                645                 650                 655
Trp Ser Gly Gly Val Asn Leu Ala Asn Arg Leu Ser Glu Thr Phe Ala
            660                 665                 670
Val Met Asn Ala Pro Gly Ile Lys Asp Ala Tyr Val Asn Gly Gln Lys
        675                 680                 685
Tyr Arg Thr Thr Asn Arg Asn Gly Val Val Ile Tyr Asp Gly Met Thr
    690                 695                 700
Pro Tyr Arg Glu Asn His Leu Met Leu Asp Val Ser Gln Ser Asp Ser
705                 710                 715                 720
Glu Ala Glu Leu Arg Gly Asn Arg Lys Ile Ala Ala Pro Tyr Arg Gly
                725                 730                 735
Ala Val Val Leu Val Asn Phe Asp Thr Asp Gln Arg Lys Pro Trp Phe
            740                 745                 750
Ile Lys Ala Leu Arg Ala Asp Gly Gln Ser Leu Thr Phe Gly Tyr Glu
        755                 760                 765
Val Asn Asp Ile His Gly His Asn Ile Gly Val Val Gly Gln Gly Ser
    770                 775                 780
Gln Leu Phe Ile Arg Thr Asn Glu Val Pro Pro Ser Val Asn Val Ala
785                 790                 795                 800
Ile Asp Lys Gln Gln Gly Leu Ser Cys Thr Ile Thr Phe Gly Lys Glu
                805                 810                 815
Ile Asp Glu Ser Arg Asn Tyr Ile Cys Gln
            820                 825


      <210> 287
      <211> 239
      <212> PRT
      <213> E. Coli

      <400> 287
Met Ala Ala Ile Pro Trp Arg Pro Phe Asn Leu Arg Gly Ile Lys Met
 1               5                  10                  15
Lys Gly Leu Leu Ser Leu Leu Ile Phe Ser Met Val Leu Pro Ala His
            20                  25                  30
Ala Gly Ile Val Ile Tyr Gly Thr Arg Ile Ile Tyr Pro Ala Glu Asn
        35                  40                  45
Lys Glu Val Met Val Gln Leu Met Asn Gln Gly Asn Arg Ser Ser Leu
    50                  55                  60
Leu Gln Ala Trp Ile Asp Asp Gly Asp Thr Ser Leu Pro Pro Glu Lys
65                  70                  75                  80
Ile Gln Val Pro Phe Met Leu Thr Pro Pro Val Ala Lys Ile Gly Ala
                85                  90                  95
Asn Ser Gly Gln Gln Val Lys Ile Lys Ile Met Pro Asn Lys Leu Pro
            100                 105                 110
Thr Asn Lys Glu Ser Ile Phe Tyr Leu Asn Val Leu Asp Ile Pro Pro
        115                 120                 125
Asn Ser Pro Glu Gln Glu Gly Lys Asn Ala Leu Lys Phe Ala Met Gln
    130                 135                 140
```

```
Asn Arg Ile Lys Leu Phe Tyr Arg Pro Ala Gly Ile Ala Pro Val Asn
145                 150                 155                 160
Lys Ala Thr Phe Lys Lys Leu Leu Val Asn Arg Ser Gly Asn Gly Leu
                165                 170                 175
Val Ile Lys Asn Asp Ser Ala Asn Trp Val Thr Ile Ser Asp Val Lys
            180                 185                 190
Ala Asn Asn Val Lys Val Asn Tyr Glu Thr Ile Met Ile Ala Pro Leu
        195                 200                 205
Glu Ser Gln Ser Val Asn Val Lys Ser Asn Asn Ala Asn Asn Trp His
    210                 215                 220
Leu Thr Ile Ile Asp Asp His Gly Asn Tyr Ile Ser Asp Lys Ile
225                 230                 235
```

<210> 288
<211> 180
<212> PRT
<213> E. Coli

<400> 288

```
Met Lys Arg Ser Ile Ile Ala Ala Ala Val Phe Ser Ser Phe Phe Met
 1               5                  10                  15
Ser Ala Gly Val Phe Ala Ala Asp Val Asp Thr Gly Thr Leu Thr Ile
            20                  25                  30
Lys Gly Asn Ile Ala Glu Ser Pro Cys Lys Phe Glu Ala Gly Gly Asp
        35                  40                  45
Ser Val Ser Ile Asn Met Pro Thr Val Pro Thr Ser Val Phe Glu Gly
    50                  55                  60
Lys Ala Lys Tyr Ser Thr Tyr Asp Asp Ala Val Gly Val Thr Ser Ser
65                  70                  75                  80
Met Leu Lys Ile Ser Cys Pro Lys Glu Val Ala Gly Val Lys Leu Ser
                85                  90                  95
Leu Ile Thr Asn Asp Lys Ile Thr Gly Asn Asp Lys Ala Ile Ala Ser
            100                 105                 110
Ser Asn Asp Thr Val Gly Tyr Tyr Leu Tyr Leu Gly Asp Asn Ser Asp
        115                 120                 125
Val Leu Asp Val Ser Ala Pro Phe Asn Ile Glu Ser Tyr Lys Thr Ala
    130                 135                 140
Glu Gly Gln Tyr Ala Ile Pro Phe Lys Ala Lys Tyr Leu Lys Leu Thr
145                 150                 155                 160
Asp Asn Ser Val Gln Ser Gly Asp Val Leu Ser Ser Leu Val Met Arg
                165                 170                 175
Val Ala Gln Asp
            180
```

<210> 289
<211> 112
<212> PRT
<213> E. Coli

<400> 289

```
Met Ser Ser Glu Arg Asp Leu Val Asn Phe Leu Gly Asp Phe Ser Met
 1               5                  10                  15
Asp Val Ala Lys Ala Val Ile Ala Gly Gly Val Ala Thr Ala Ile Gly
            20                  25                  30
```

```
Ser Leu Ala Ser Phe Ala Cys Val Ser Phe Gly Phe Pro Val Ile Leu
        35                  40                  45
Val Gly Gly Ala Ile Leu Leu Thr Gly Ile Val Cys Thr Val Val Leu
    50                  55                  60
Asn Glu Ile Asp Ala Gln Cys His Leu Ser Glu Lys Leu Lys Tyr Ala
65                  70                  75                  80
Ile Arg Asp Gly Leu Lys Arg Gln Gln Glu Leu Asp Lys Trp Lys Arg
                85                  90                  95
Glu Asn Met Thr Pro Phe Met Tyr Val Leu Asn Thr Pro Pro Val Ile
            100                 105                 110
```

<210> 290
<211> 193
<212> PRT
<213> E. Coli

<400> 290

```
Met Thr Asp Tyr Leu Leu Leu Phe Val Gly Thr Val Leu Val Asn Asn
 1               5                  10                  15
Phe Val Leu Val Lys Phe Leu Gly Leu Cys Pro Phe Met Gly Val Ser
            20                  25                  30
Lys Lys Leu Glu Thr Ala Met Gly Met Gly Leu Ala Thr Thr Phe Val
        35                  40                  45
Met Thr Leu Ala Ser Ile Cys Ala Trp Leu Ile Asp Thr Trp Ile Leu
    50                  55                  60
Ile Pro Leu Asn Leu Ile Tyr Leu Arg Thr Leu Ala Phe Ile Leu Val
65                  70                  75                  80
Ile Ala Val Val Val Gln Phe Thr Glu Met Val Val Arg Lys Thr Ser
                85                  90                  95
Pro Val Leu Tyr Arg Leu Leu Gly Ile Phe Leu Pro Leu Ile Thr Thr
            100                 105                 110
Asn Cys Ala Val Leu Gly Val Ala Leu Leu Asn Ile Asn Leu Gly His
        115                 120                 125
Asn Phe Leu Gln Ser Ala Leu Tyr Gly Phe Ser Ala Ala Val Gly Phe
    130                 135                 140
Ser Leu Val Met Val Leu Phe Ala Ala Ile Arg Glu Arg Leu Ala Val
145                 150                 155                 160
Ala Asp Val Pro Ala Pro Phe Arg Gly Asn Ala Ile Ala Leu Ile Thr
                165                 170                 175
Ala Gly Leu Met Ser Leu Ala Phe Met Gly Phe Ser Gly Leu Val Lys
            180                 185                 190
Leu
```

<210> 291
<211> 192
<212> PRT
<213> E. Coli

<400> 291

```
Met Asn Ala Ile Trp Ile Ala Val Ala Ala Val Ser Leu Leu Gly Leu
 1               5                  10                  15
Ala Phe Gly Ala Ile Leu Gly Tyr Ala Ser Arg Arg Phe Ala Val Glu
            20                  25                  30
```

Asp Asp Pro Val Val Glu Lys Ile Asp Glu Ile Leu Pro Gln Ser Gln
35 40 45
Cys Gly Gln Cys Gly Tyr Pro Gly Cys Arg Pro Tyr Ala Glu Ala Ile
50 55 60
Ser Cys Asn Gly Glu Lys Ile Asn Arg Cys Ala Pro Gly Gly Glu Ala
65 70 75 80
Val Met Leu Lys Ile Ala Glu Leu Leu Asn Val Glu Pro Gln Pro Leu
85 90 95
Asp Gly Glu Ala Gln Glu Ile Thr Pro Ala Arg Met Val Ala Val Ile
100 105 110
Asp Glu Asn Asn Cys Ile Gly Cys Thr Lys Cys Ile Gln Ala Cys Pro
115 120 125
Val Asp Ala Ile Val Gly Ala Thr Arg Ala Met His Thr Val Met Ser
130 135 140
Asp Leu Cys Thr Gly Cys Asn Leu Cys Val Asp Pro Cys Pro Thr His
145 150 155 160
Cys Ile Ser Leu Gln Pro Val Ala Glu Thr Pro Asp Ser Trp Lys Trp
165 170 175
Asp Leu Asn Thr Ile Pro Val Arg Ile Ile Pro Val Glu His His Ala
180 185 190

<210> 292
<211> 740
<212> PRT
<213> E. Coli

<400> 292
Met Leu Lys Leu Phe Ser Ala Phe Arg Lys Asn Lys Ile Trp Asp Phe
1 5 10 15
Asn Gly Gly Ile His Pro Pro Glu Met Lys Thr Gln Ser Asn Gly Thr
20 25 30
Pro Leu Arg Gln Val Pro Leu Ala Gln Arg Phe Val Ile Pro Leu Lys
35 40 45
Gln His Ile Gly Ala Glu Gly Glu Leu Cys Val Ser Val Gly Asp Lys
50 55 60
Val Leu Arg Gly Gln Pro Leu Thr Arg Gly Arg Gly Lys Met Leu Pro
65 70 75 80
Val His Ala Pro Thr Ser Gly Thr Val Thr Ala Ile Ala Pro His Ser
85 90 95
Thr Ala His Pro Ser Ala Leu Ala Glu Leu Ser Val Ile Ile Asp Ala
100 105 110
Asp Gly Glu Asp Cys Trp Ile Pro Arg Asp Gly Trp Ala Asp Tyr Arg
115 120 125
Thr Arg Ser Arg Glu Glu Leu Ile Glu Arg Ile His Gln Phe Gly Val
130 135 140
Ala Gly Leu Gly Gly Ala Gly Phe Pro Thr Gly Val Lys Leu Gln Gly
145 150 155 160
Gly Gly Asp Lys Ile Glu Thr Leu Ile Ile Asn Ala Ala Glu Cys Glu
165 170 175
Pro Tyr Ile Thr Ala Asp Asp Arg Leu Met Gln Asp Cys Ala Ala Gln
180 185 190
Val Val Glu Gly Ile Arg Ile Leu Ala His Ile Leu Gln Pro Arg Glu
195 200 205
Ile Leu Ile Gly Ile Glu Asp Asn Lys Pro Gln Ala Ile Ser Met Leu
210 215 220
Arg Ala Val Leu Ala Asp Ser Asn Asp Ile Ser Leu Arg Val Ile Pro

```
225                 230                 235                 240
Thr Lys Tyr Pro Ser Gly Gly Ala Lys Gln Leu Thr Tyr Ile Leu Thr
                245                 250                 255
Gly Lys Gln Val Pro His Gly Gly Arg Ser Ser Asp Ile Gly Val Leu
            260                 265                 270
Met Gln Asn Val Gly Thr Ala Tyr Ala Val Lys Arg Ala Val Ile Asp
        275                 280                 285
Gly Glu Pro Ile Thr Glu Arg Val Val Thr Leu Thr Gly Glu Ala Ile
    290                 295                 300
Ala Arg Pro Gly Asn Val Trp Ala Arg Leu Gly Thr Pro Val Arg His
305                 310                 315                 320
Leu Leu Asn Asp Ala Gly Phe Cys Pro Ser Ala Asp Gln Met Val Ile
                325                 330                 335
Met Gly Gly Pro Leu Met Gly Phe Thr Leu Pro Trp Leu Asp Val Pro
            340                 345                 350
Val Val Lys Ile Thr Asn Cys Leu Leu Ala Pro Ser Ala Asn Glu Leu
        355                 360                 365
Gly Glu Pro Gln Glu Glu Gln Ser Cys Ile Arg Cys Ser Ala Cys Ala
    370                 375                 380
Asp Ala Cys Pro Ala Asp Leu Leu Pro Gln Gln Leu Tyr Trp Phe Ser
385                 390                 395                 400
Lys Gly Gln Gln His Asp Lys Ala Thr Thr His Asn Ile Ala Asp Cys
                405                 410                 415
Ile Glu Cys Gly Ala Cys Ala Trp Val Cys Pro Ser Asn Ile Pro Leu
            420                 425                 430
Val Gln Tyr Phe Arg Gln Glu Lys Ala Glu Ile Ala Ala Ile Arg Gln
        435                 440                 445
Glu Glu Lys Arg Ala Ala Glu Ala Lys Ala Arg Phe Glu Ala Arg Gln
    450                 455                 460
Ala Arg Leu Glu Arg Glu Lys Ala Ala Arg Leu Glu Arg His Lys Ser
465                 470                 475                 480
Ala Ala Val Gln Pro Ala Ala Lys Asp Lys Asp Ala Ile Ala Ala Ala
                485                 490                 495
Leu Ala Arg Val Lys Glu Lys Gln Ala Gln Ala Thr Gln Pro Ile Val
            500                 505                 510
Ile Lys Ala Gly Glu Arg Pro Asp Asn Ser Ala Ile Ile Ala Ala Arg
        515                 520                 525
Glu Ala Arg Lys Ala Gln Ala Arg Ala Lys Gln Ala Glu Leu Gln Gln
    530                 535                 540
Thr Asn Asp Ala Ala Thr Val Ala Asp Pro Arg Lys Thr Ala Val Glu
545                 550                 555                 560
Ala Ala Ile Ala Arg Ala Lys Ala Arg Lys Leu Glu Gln Gln Gln Ala
                565                 570                 575
Asn Ala Glu Pro Glu Gln Gln Val Asp Pro Arg Lys Ala Ala Val Glu
            580                 585                 590
Ala Ala Ile Ala Arg Ala Lys Ala Arg Lys Leu Glu Gln Gln Gln Ala
        595                 600                 605
Asn Ala Glu Pro Glu Glu Gln Val Asp Pro Arg Lys Ala Ala Val Glu
    610                 615                 620
Ala Ala Ile Ala Arg Ala Lys Ala Arg Lys Leu Glu Gln Gln Gln Ala
625                 630                 635                 640
Asn Ala Glu Pro Glu Gln Gln Val Asp Pro Arg Lys Ala Ala Val Glu
                645                 650                 655
Ala Ala Ile Ala Arg Ala Lys Ala Arg Lys Arg Glu Gln Gln Pro Ala
            660                 665                 670
Asn Ala Glu Pro Glu Glu Gln Val Asp Pro Arg Lys Ala Ala Val Glu
        675                 680                 685
```

```
Ala Ala Ile Ala Arg Ala Lys Ala Arg Lys Leu Glu Gln Gln Gln Ala
    690                 695                 700
Asn Ala Val Pro Glu Glu Gln Val Asp Pro Arg Lys Ala Ala Val Ala
705                 710                 715                 720
Ala Ala Ile Ala Arg Ala Gln Ala Lys Lys Ala Ala Gln Gln Lys Val
                725                 730                 735
Val Asn Glu Asp
            740
```

<210> 293
<211> 352
<212> PRT
<213> E. Coli

<400> 293

```
Met Val Phe Arg Ile Ala Ser Ser Pro Tyr Thr His Asn Gln Arg Gln
 1               5                  10                  15
Thr Ser Arg Ile Met Leu Leu Val Leu Leu Ala Ala Val Pro Gly Ile
            20                  25                  30
Ala Ala Gln Leu Trp Phe Phe Gly Trp Gly Thr Leu Val Gln Ile Leu
        35                  40                  45
Leu Ala Ser Val Ser Ala Leu Leu Ala Glu Ala Leu Val Leu Lys Leu
    50                  55                  60
Arg Lys Gln Ser Val Ala Ala Thr Leu Lys Asp Asn Ser Ala Leu Leu
65                  70                  75                  80
Thr Gly Leu Leu Leu Ala Val Ser Ile Pro Pro Leu Ala Pro Trp Trp
                85                  90                  95
Met Val Val Leu Gly Thr Val Phe Ala Val Ile Ile Ala Lys Gln Leu
            100                 105                 110
Tyr Gly Gly Leu Gly Gln Asn Pro Phe Asn Pro Ala Met Ile Gly Tyr
        115                 120                 125
Val Val Leu Leu Ile Ser Phe Pro Val Gln Met Thr Ser Trp Leu Pro
    130                 135                 140
Pro His Glu Ile Ala Val Asn Ile Pro Gly Phe Ile Asp Ala Ile Gln
145                 150                 155                 160
Val Ile Phe Ser Gly His Thr Ala Ser Gly Gly Asp Met Asn Thr Leu
                165                 170                 175
Arg Leu Gly Ile Asp Gly Ile Ser Gln Ala Thr Pro Leu Asp Thr Phe
            180                 185                 190
Lys Thr Ser Val Arg Ala Gly His Ser Val Glu Gln Ile Met Gln Tyr
        195                 200                 205
Pro Ile Tyr Ser Gly Ile Leu Ala Gly Ala Gly Trp Gln Trp Val Asn
    210                 215                 220
Leu Ala Trp Leu Ala Gly Gly Val Trp Leu Leu Trp Gln Lys Ala Ile
225                 230                 235                 240
Arg Trp His Ile Pro Leu Ser Phe Leu Val Thr Leu Ala Leu Cys Ala
                245                 250                 255
Met Leu Gly Trp Leu Phe Ser Pro Glu Thr Leu Ala Ala Pro Gln Ile
            260                 265                 270
His Leu Leu Ser Gly Ala Thr Met Leu Gly Ala Phe Phe Ile Leu Thr
        275                 280                 285
Asp Pro Val Thr Ala Ser Thr Thr Asn Arg Gly Arg Leu Ile Phe Gly
    290                 295                 300
Ala Leu Ala Gly Leu Leu Val Trp Leu Ile Arg Ser Phe Gly Gly Tyr
305                 310                 315                 320
```

```
Pro Asp Gly Val Ala Phe Ala Val Leu Leu Ala Asn Ile Thr Val Pro
                325                 330                 335
Leu Ile Asp Tyr Tyr Thr Arg Pro Arg Val Tyr Gly His Arg Lys Gly
            340                 345                 350


      <210> 294
      <211> 206
      <212> PRT
      <213> E. Coli

      <400> 294
Met Leu Lys Thr Ile Arg Lys His Gly Ile Thr Leu Ala Leu Phe Ala
 1               5                  10                  15
Ala Gly Ser Thr Gly Leu Thr Ala Ala Ile Asn Gln Met Thr Lys Thr
            20                  25                  30
Thr Ile Ala Glu Gln Ala Ser Leu Gln Gln Lys Ala Leu Phe Asp Gln
        35                  40                  45
Val Leu Pro Ala Glu Arg Tyr Asn Asn Ala Leu Ala Gln Ser Cys Tyr
    50                  55                  60
Leu Val Thr Ala Pro Glu Leu Gly Lys Gly Glu His Arg Val Tyr Ile
65                  70                  75                  80
Ala Lys Gln Asp Asp Lys Pro Val Ala Ala Val Leu Glu Ala Thr Ala
                85                  90                  95
Pro Asp Gly Tyr Ser Gly Ala Ile Gln Leu Leu Val Gly Ala Asp Phe
            100                 105                 110
Asn Gly Thr Val Leu Gly Thr Arg Val Thr Glu His His Glu Thr Pro
        115                 120                 125
Gly Leu Gly Asp Lys Ile Glu Leu Arg Leu Ser Asp Trp Ile Thr His
    130                 135                 140
Phe Ala Gly Lys Lys Ile Ser Gly Ala Asp Asp Ala His Trp Ala Val
145                 150                 155                 160
Lys Lys Asp Gly Gly Asp Phe Asp Gln Phe Thr Gly Ala Thr Ile Thr
                165                 170                 175
Pro Arg Ala Val Val Asn Ala Val Lys Arg Ala Gly Leu Tyr Ala Gln
            180                 185                 190
Thr Leu Pro Ala Gln Leu Ser Gln Leu Pro Ala Cys Gly Glu
        195                 200                 205


      <210> 295
      <211> 231
      <212> PRT
      <213> E. Coli

      <400> 295
Met Ser Glu Ile Lys Asp Val Ile Val Gln Gly Leu Trp Lys Asn Asn
 1               5                  10                  15
Ser Ala Leu Val Gln Leu Leu Gly Leu Cys Pro Leu Leu Ala Val Thr
            20                  25                  30
Ser Thr Ala Thr Asn Ala Leu Gly Leu Gly Leu Ala Thr Thr Leu Val
        35                  40                  45
Leu Thr Leu Thr Asn Leu Thr Ile Ser Thr Leu Arg His Trp Thr Pro
    50                  55                  60
Ala Glu Ile Arg Ile Pro Ile Tyr Val Met Ile Ile Ala Ser Val Val
65                  70                  75                  80
Ser Ala Val Gln Met Leu Ile Asn Ala Tyr Ala Phe Gly Leu Tyr Gln
```

```
                85                  90                  95
Ser Leu Gly Ile Phe Ile Pro Leu Ile Val Thr Asn Cys Ile Val Val
            100                 105                 110
Gly Arg Ala Glu Ala Phe Ala Ala Lys Lys Gly Pro Ala Leu Ser Ala
        115                 120                 125
Leu Asp Gly Phe Ser Ile Gly Met Gly Ala Thr Cys Ala Met Phe Val
    130                 135                 140
Leu Gly Ser Leu Arg Glu Ile Ile Gly Asn Gly Thr Leu Phe Asp Gly
145                 150                 155                 160
Ala Asp Ala Leu Leu Gly Ser Trp Ala Lys Val Leu Arg Val Glu Ile
                165                 170                 175
Phe His Thr Asp Ser Pro Phe Leu Leu Ala Met Leu Pro Pro Gly Ala
            180                 185                 190
Phe Ile Gly Leu Gly Leu Met Leu Ala Gly Lys Tyr Leu Ile Asp Glu
        195                 200                 205
Arg Met Lys Lys Arg Arg Ala Glu Ala Ala Ala Glu Arg Ala Leu Pro
    210                 215                 220
Asn Gly Glu Thr Gly Asn Val
225                 230
```

<210> 296
<211> 211
<212> PRT
<213> E. Coli

<400> 296

```
Met Asn Lys Ala Lys Arg Leu Glu Ile Leu Thr Arg Leu Arg Glu Asn
 1               5                  10                  15
Asn Pro His Pro Thr Thr Glu Leu Asn Phe Ser Ser Pro Phe Glu Leu
            20                  25                  30
Leu Ile Ala Val Leu Leu Ser Ala Gln Ala Thr Asp Val Ser Val Asn
        35                  40                  45
Lys Ala Thr Ala Lys Leu Tyr Pro Val Ala Asn Thr Pro Ala Ala Met
    50                  55                  60
Leu Glu Leu Gly Val Glu Gly Val Lys Thr Tyr Ile Lys Thr Ile Gly
65                  70                  75                  80
Leu Tyr Asn Ser Lys Ala Glu Asn Ile Ile Lys Thr Cys Arg Ile Leu
                85                  90                  95
Leu Glu Gln His Asn Gly Glu Val Pro Glu Asp Arg Ala Ala Leu Glu
            100                 105                 110
Ala Leu Pro Gly Val Gly Arg Lys Thr Ala Asn Val Val Leu Asn Thr
        115                 120                 125
Ala Phe Gly Trp Pro Thr Ile Ala Val Asp Thr His Ile Phe Arg Val
    130                 135                 140
Cys Asn Arg Thr Gln Phe Ala Pro Gly Lys Asn Val Glu Gln Val Glu
145                 150                 155                 160
Glu Lys Leu Leu Lys Val Val Pro Ala Glu Phe Lys Val Asp Cys His
                165                 170                 175
His Trp Leu Ile Leu His Gly Arg Tyr Thr Cys Ile Ala Arg Lys Pro
            180                 185                 190
Arg Cys Gly Ser Cys Ile Ile Glu Asp Leu Cys Glu Tyr Lys Glu Lys
        195                 200                 205
Val Asp Ile
    210
```

<210> 297
<211> 167
<212> PRT
<213> E. Coli

<400> 297

```
Met Lys Arg Leu His Lys Arg Phe Leu Leu Ala Thr Phe Cys Ala Leu
 1               5                  10                  15
Phe Thr Ala Thr Leu Gln Ala Ala Asp Val Thr Ile Thr Val Asn Gly
            20                  25                  30
Arg Val Val Ala Lys Pro Cys Thr Ile Gln Thr Lys Glu Ala Asn Val
        35                  40                  45
Asn Leu Gly Asp Leu Tyr Thr Arg Asn Leu Gln Gln Pro Gly Ser Ala
    50                  55                  60
Ser Gly Trp His Asn Ile Thr Leu Ser Leu Thr Asp Cys Pro Val Glu
65                  70                  75                  80
Thr Ser Ala Val Thr Ala Ile Val Thr Gly Ser Thr Asp Asn Thr Gly
                85                  90                  95
Tyr Tyr Lys Asn Glu Gly Thr Ala Glu Asn Ile Gln Ile Glu Leu Arg
            100                 105                 110
Asp Asp Gln Asp Ala Ala Leu Lys Asn Gly Asp Ser Lys Thr Val Ile
        115                 120                 125
Val Asp Glu Ile Thr Arg Asn Ala Gln Phe Pro Leu Lys Ala Arg Ala
    130                 135                 140
Ile Thr Val Asn Gly Asn Ala Ser Gln Gly Thr Ile Glu Ala Leu Ile
145                 150                 155                 160
Asn Val Ile Tyr Thr Trp Gln
                165
```

<210> 298
<211> 176
<212> PRT
<213> E. Coli

<400> 298

```
Met Lys Tyr Asn Asn Ile Ile Phe Leu Gly Leu Cys Leu Gly Leu Thr
 1               5                  10                  15
Thr Tyr Ser Ala Leu Ser Ala Asp Ser Val Ile Lys Ile Ser Gly Arg
            20                  25                  30
Val Leu Asp Tyr Gly Cys Thr Val Ser Ser Asp Ser Leu Asn Phe Thr
        35                  40                  45
Val Asp Leu Gln Lys Asn Ser Ala Arg Gln Phe Pro Thr Thr Gly Ser
    50                  55                  60
Thr Ser Pro Ala Val Pro Phe Gln Ile Thr Leu Ser Glu Cys Ser Lys
65                  70                  75                  80
Gly Thr Thr Gly Val Arg Val Ala Phe Asn Gly Ile Glu Asp Ala Glu
                85                  90                  95
Asn Asn Thr Leu Leu Lys Leu Asp Glu Gly Ser Asn Thr Ala Ser Gly
            100                 105                 110
Leu Gly Ile Glu Ile Leu Asp Ala Asn Met Arg Pro Val Lys Leu Asn
        115                 120                 125
Asp Leu His Ala Gly Met Gln Trp Ile Pro Leu Val Pro Glu Gln Asn
    130                 135                 140
Asn Ile Leu Pro Tyr Ser Ala Arg Leu Lys Ser Thr Gln Lys Ser Val
145                 150                 155                 160
```

```
Asn Pro Gly Leu Val Arg Ala Ser Ala Thr Phe Thr Leu Glu Phe Gln
                165                 170                 175
```

<210> 299
<211> 382
<212> PRT
<213> E. Coli

<400> 299

```
Met Ser Gly Tyr Thr Val Lys Pro Pro Thr Gly Asp Thr Asn Glu Gln
 1               5                  10                  15
Thr Gln Phe Ile Asp Tyr Phe Asn Leu Phe Tyr Ser Lys Arg Gly Gln
            20                  25                  30
Glu Gln Ile Ser Ile Ser Gln Gln Leu Gly Asn Tyr Gly Thr Thr Phe
        35                  40                  45
Phe Ser Ala Ser Arg Gln Ser Tyr Trp Asn Thr Ser Arg Ser Asp Gln
    50                  55                  60
Gln Ile Ser Phe Gly Leu Asn Val Pro Phe Gly Asp Ile Thr Thr Ser
65                  70                  75                  80
Leu Asn Tyr Ser Tyr Ser Asn Asn Ile Trp Gln Asn Asp Arg Asp His
                85                  90                  95
Leu Leu Ala Phe Thr Leu Asn Val Pro Phe Ser His Trp Met Arg Thr
            100                 105                 110
Asp Ser Gln Ser Ala Phe Arg Asn Ser Asn Ala Ser Tyr Ser Met Ser
        115                 120                 125
Asn Asp Leu Lys Gly Gly Met Thr Asn Leu Ser Gly Val Tyr Gly Thr
    130                 135                 140
Leu Leu Pro Asp Asn Asn Leu Asn Tyr Ser Val Gln Val Gly Asn Thr
145                 150                 155                 160
His Gly Gly Asn Thr Ser Ser Gly Thr Ser Gly Tyr Ser Ser Leu Asn
                165                 170                 175
Tyr Arg Gly Ala Tyr Gly Asn Thr Asn Val Gly Tyr Ser Arg Ser Gly
            180                 185                 190
Asp Ser Ser Gln Ile Tyr Tyr Gly Met Ser Gly Gly Ile Ile Ala His
        195                 200                 205
Ala Asp Gly Ile Thr Phe Gly Gln Pro Leu Gly Asp Thr Met Val Leu
    210                 215                 220
Val Lys Ala Pro Gly Ala Asp Asn Val Lys Ile Glu Asn Gln Thr Gly
225                 230                 235                 240
Ile His Thr Asp Trp Arg Gly Tyr Ala Ile Leu Pro Phe Ala Thr Glu
                245                 250                 255
Tyr Arg Glu Asn Arg Val Ala Leu Asn Ala Asn Ser Leu Ala Asp Asn
            260                 265                 270
Val Glu Leu Asp Glu Thr Val Val Thr Val Ile Pro Thr His Gly Ala
        275                 280                 285
Ile Ala Arg Ala Thr Phe Asn Ala Gln Ile Gly Gly Lys Val Leu Met
    290                 295                 300
Thr Leu Lys Tyr Gly Asn Lys Ser Val Pro Phe Gly Ala Ile Val Thr
305                 310                 315                 320
His Gly Glu Asn Lys Asn Gly Ser Ile Val Ala Glu Asn Gly Gln Val
                325                 330                 335
Tyr Leu Thr Gly Leu Pro Gln Ser Gly Gln Leu Gln Val Ser Trp Gly
            340                 345                 350
Lys Asp Lys Asn Ser Asn Cys Ile Val Glu Tyr Lys Leu Pro Glu Val
        355                 360                 365
```

```
Ser Pro Gly Thr Leu Leu Asn Gln Gln Thr Ala Ile Cys Arg
    370                 375                 380


      <210> 300
      <211> 138
      <212> PRT
      <213> E. Coli

      <400> 300
Met Ile Ala Ile Ala Asp Ile Leu Gln Ala Gly Glu Lys Leu Thr Ala
 1               5                  10                  15
Val Ala Pro Phe Leu Ala Gly Ile Gln Asn Glu Glu Gln Tyr Thr Gln
            20                  25                  30
Ala Leu Glu Leu Val Asp His Leu Leu Leu Asn Asp Pro Glu Asn Pro
        35                  40                  45
Leu Leu Asp Leu Val Cys Ala Lys Ile Thr Ala Trp Glu Glu Ser Ala
    50                  55                  60
Pro Glu Phe Ala Glu Phe Asn Ala Met Ala Gln Ala Met Pro Gly Gly
65                  70                  75                  80
Ile Ala Val Ile Arg Thr Leu Met Asp Gln Tyr Gly Leu Thr Leu Ser
                85                  90                  95
Asp Leu Pro Glu Ile Gly Ser Lys Ser Met Val Ser Arg Val Leu Ser
            100                 105                 110
Gly Lys Arg Lys Leu Thr Leu Glu His Ala Lys Lys Leu Ala Thr Arg
        115                 120                 125
Phe Gly Ile Ser Pro Ala Leu Phe Ile Asp
    130                 135



      <210> 301
      <211> 104
      <212> PRT
      <213> E. Coli

      <400> 301
Met His Leu Ile Thr Gln Lys Ala Leu Lys Asp Ala Ala Glu Lys Tyr
 1               5                  10                  15
Pro Gln His Lys Thr Glu Leu Val Ala Leu Gly Asn Thr Ile Ala Lys
            20                  25                  30
Gly Tyr Phe Lys Lys Pro Glu Ser Leu Lys Ala Val Phe Pro Ser Leu
        35                  40                  45
Asp Asn Phe Lys Tyr Leu Asp Lys His Tyr Val Phe Asn Val Gly Gly
    50                  55                  60
Asn Glu Leu Arg Val Val Ala Met Val Phe Phe Glu Ser Gln Lys Cys
65                  70                  75                  80
Tyr Ile Arg Glu Val Met Thr His Lys Glu Tyr Asp Phe Phe Thr Ala
                85                  90                  95
Val His Arg Thr Lys Gly Lys Lys
            100


      <210> 302
      <211> 2383
      <212> PRT
      <213> E. Coli
```

<400> 302

```
Met Leu Ser Val Phe Thr Phe Phe Arg Cys Ala Arg Lys Gly Ala Phe
 1               5                  10                  15
Met Leu Ala Arg Ser Gly Lys Val Ser Met Ala Thr Lys Lys Arg Ser
            20                  25                  30
Gly Glu Glu Ile Asn Asp Arg Gln Ile Leu Cys Gly Met Gly Ile Lys
        35                  40                  45
Leu Arg Arg Leu Thr Ala Gly Ile Cys Leu Ile Thr Gln Leu Ala Phe
    50                  55                  60
Pro Met Ala Ala Ala Ala Gln Gly Val Val Asn Ala Ala Thr Gln Gln
65                  70                  75                  80
Pro Val Pro Ala Gln Ile Ala Ile Ala Asn Ala Asn Thr Val Pro Tyr
                85                  90                  95
Thr Leu Gly Ala Leu Glu Ser Ala Gln Ser Val Ala Glu Arg Phe Gly
            100                 105                 110
Ile Ser Val Ala Glu Leu Arg Lys Leu Asn Gln Phe Arg Thr Phe Ala
        115                 120                 125
Arg Ser Phe Asp Asn Val Arg Gln Gly Asp Glu Leu Asp Val Pro Ala
    130                 135                 140
Gln Val Ser Glu Lys Lys Leu Thr Pro Pro Pro Gly Asn Ser Ser Asp
145                 150                 155                 160
Asn Leu Glu Gln Gln Ile Ala Ser Thr Ser Gln Gln Ile Gly Ser Leu
                165                 170                 175
Leu Ala Glu Asp Met Asn Ser Glu Gln Ala Ala Asn Met Ala Arg Gly
            180                 185                 190
Trp Ala Ser Ser Gln Ala Ser Gly Ala Met Thr Asp Trp Leu Ser Arg
        195                 200                 205
Phe Gly Thr Ala Arg Ile Thr Leu Gly Val Asp Glu Asp Phe Ser Leu
    210                 215                 220
Lys Asn Ser Gln Phe Asp Phe Leu His Pro Trp Tyr Glu Thr Pro Asp
225                 230                 235                 240
Asn Leu Phe Phe Ser Gln His Thr Leu His Arg Thr Asp Glu Arg Thr
                245                 250                 255
Gln Ile Asn Asn Gly Leu Gly Trp Arg His Phe Thr Pro Thr Trp Met
            260                 265                 270
Ser Gly Ile Asn Phe Phe Phe Asp His Asp Leu Ser Arg Tyr His Ser
        275                 280                 285
Arg Ala Gly Ile Gly Ala Glu Tyr Trp Arg Asp Tyr Leu Lys Leu Ser
    290                 295                 300
Ser Asn Gly Tyr Leu Arg Leu Thr Asn Trp Arg Ser Ala Pro Glu Leu
305                 310                 315                 320
Asp Asn Asp Tyr Glu Ala Arg Pro Ala Asn Gly Trp Asp Val Arg Ala
                325                 330                 335
Glu Ser Trp Leu Pro Ala Trp Pro His Leu Gly Gly Lys Leu Val Tyr
            340                 345                 350
Glu Gln Tyr Tyr Gly Asp Glu Val Ala Leu Phe Asp Lys Asp Asp Arg
        355                 360                 365
Gln Ser Asn Pro His Ala Ile Thr Ala Gly Leu Asn Tyr Thr Pro Phe
    370                 375                 380
Pro Leu Met Thr Phe Ser Ala Glu Gln Arg Gln Gly Lys Gln Gly Glu
385                 390                 395                 400
Asn Asp Thr Arg Phe Ala Val Asp Phe Thr Trp Gln Pro Gly Ser Ala
                405                 410                 415
Met Gln Lys Gln Leu Asp Pro Asn Glu Val Ala Ala Arg Arg Ser Leu
            420                 425                 430
Ala Gly Ser Arg Tyr Asp Leu Val Asp Arg Asn Asn Asn Ile Val Leu
```

```
        435                 440                 445
Glu Tyr Arg Lys Lys Glu Leu Val Arg Leu Thr Leu Thr Asp Pro Val
    450                 455                 460
Thr Gly Lys Ser Gly Glu Val Lys Ser Leu Val Ser Ser Leu Gln Thr
465                 470                 475                 480
Lys Tyr Ala Leu Lys Gly Tyr Asn Val Glu Ala Thr Ala Leu Glu Ala
                485                 490                 495
Ala Gly Gly Lys Val Val Thr Thr Gly Lys Asp Ile Leu Val Thr Leu
            500                 505                 510
Pro Ala Tyr Arg Phe Thr Ser Thr Pro Glu Thr Asp Asn Thr Trp Pro
        515                 520                 525
Ile Glu Val Thr Ala Glu Asp Val Lys Gly Asn Leu Ser Asn Arg Glu
    530                 535                 540
Gln Ser Met Val Val Val Gln Ala Pro Thr Leu Ser Gln Lys Asp Ser
545                 550                 555                 560
Ser Val Ser Leu Ser Thr Gln Thr Leu Asn Ala Asp Ser His Ser Thr
                565                 570                 575
Ala Thr Leu Thr Phe Ile Ala His Asp Ala Ala Gly Asn Pro Val Val
            580                 585                 590
Gly Leu Val Leu Ser Thr Arg His Glu Gly Val Gln Asp Ile Thr Leu
        595                 600                 605
Ser Asp Trp Lys Asp Asn Gly Asp Gly Ser Tyr Thr Gln Ile Leu Thr
    610                 615                 620
Thr Gly Ala Met Ser Gly Thr Leu Thr Leu Met Pro Gln Leu Asn Gly
625                 630                 635                 640
Val Asp Ala Ala Lys Ala Pro Ala Val Val Asn Ile Ile Ser Val Ser
                645                 650                 655
Ser Ser Arg Thr His Ser Ser Ile Lys Ile Asp Lys Asp Arg Tyr Leu
            660                 665                 670
Ser Gly Asn Pro Ile Glu Val Thr Val Glu Leu Arg Asp Glu Asn Asp
        675                 680                 685
Lys Pro Val Lys Glu Gln Lys Gln Gln Leu Asn Asn Ala Val Ser Ile
    690                 695                 700
Asp Asn Val Lys Pro Gly Val Thr Thr Asp Trp Lys Glu Thr Ala Asp
705                 710                 715                 720
Gly Val Tyr Lys Ala Thr Tyr Thr Ala Tyr Thr Lys Gly Ser Gly Leu
                725                 730                 735
Thr Ala Lys Leu Leu Met Gln Asn Trp Asn Glu Asp Leu His Thr Ala
            740                 745                 750
Gly Phe Ile Ile Asp Ala Asn Pro Gln Ser Ala Lys Ile Ala Thr Leu
        755                 760                 765
Ser Ala Ser Asn Asn Gly Val Leu Ala Asn Glu Asn Ala Ala Asn Thr
    770                 775                 780
Val Ser Val Asn Val Ala Asp Glu Gly Ser Asn Pro Ile Asn Asp His
785                 790                 795                 800
Thr Val Thr Phe Ala Val Leu Ser Gly Ser Ala Thr Ser Phe Asn Asn
                805                 810                 815
Gln Asn Thr Ala Lys Thr Asp Val Asn Gly Leu Ala Thr Phe Asp Leu
            820                 825                 830
Lys Ser Ser Lys Gln Glu Asp Asn Thr Val Glu Val Thr Leu Glu Asn
        835                 840                 845
Gly Val Lys Gln Thr Leu Ile Val Ser Phe Val Gly Asp Ser Ser Thr
    850                 855                 860
Ala Gln Val Asp Leu Gln Lys Ser Lys Asn Glu Val Val Ala Asp Gly
865                 870                 875                 880
Asn Asp Ser Val Thr Met Thr Ala Thr Val Arg Asp Ala Lys Gly Asn
                885                 890                 895
```

Leu Leu Asn Asp Val Met Val Thr Phe Asn Val Asn Ser Ala Glu Ala
900 905 910
Lys Leu Ser Gln Thr Glu Val Asn Ser His Asp Gly Ile Ala Thr Ala
915 920 925
Thr Leu Thr Ser Leu Lys Asn Gly Asp Tyr Arg Val Thr Ala Ser Val
930 935 940
Ser Ser Gly Ser Gln Ala Asn Gln Gln Val Asn Phe Ile Gly Asp Gln
945 950 955 960
Ser Thr Ala Ala Leu Thr Leu Ser Val Pro Ser Gly Asp Ile Thr Val
965 970 975
Thr Asn Thr Ala Pro Gln Tyr Met Thr Ala Thr Leu Gln Asp Lys Asn
980 985 990
Gly Asn Pro Leu Lys Asp Lys Glu Ile Thr Phe Ser Val Pro Asn Asp
995 1000 1005
Val Ala Ser Lys Phe Ser Ile Ser Asn Gly Gly Lys Gly Met Thr Asp
1010 1015 1020
Ser Asn Gly Val Ala Ile Ala Ser Leu Thr Gly Thr Leu Ala Gly Thr
1025 1030 1035 1040
His Met Ile Met Ala Arg Leu Ala Asn Ser Asn Val Ser Asp Ala Gln
1045 1050 1055
Pro Met Thr Phe Val Ala Asp Lys Asp Arg Ala Val Val Val Leu Gln
1060 1065 1070
Thr Ser Lys Ala Glu Ile Ile Gly Asn Gly Val Asp Glu Thr Thr Leu
1075 1080 1085
Thr Ala Thr Val Lys Asp Pro Ser Asn His Pro Val Ala Gly Ile Thr
1090 1095 1100
Val Asn Phe Thr Met Pro Gln Asp Val Ala Ala Asn Phe Thr Leu Glu
1105 1110 1115 1120
Asn Asn Gly Ile Ala Ile Thr Gln Ala Asn Gly Glu Ala His Val Thr
1125 1130 1135
Leu Lys Gly Lys Lys Ala Gly Thr His Thr Val Thr Ala Thr Leu Gly
1140 1145 1150
Asn Asn Asn Thr Ser Asp Ser Gln Pro Val Thr Phe Val Ala Asp Lys
1155 1160 1165
Ala Ser Ala Gln Val Val Leu Gln Ile Ser Lys Asp Glu Ile Thr Gly
1170 1175 1180
Asn Gly Val Asp Ser Ala Thr Leu Thr Ala Thr Val Lys Asp Gln Phe
1185 1190 1195 1200
Asp Asn Glu Val Asn Asn Leu Pro Val Thr Phe Ser Ser Ala Ser Ser
1205 1210 1215
Gly Leu Thr Leu Thr Pro Gly Val Ser Asn Thr Asn Glu Ser Gly Ile
1220 1225 1230
Ala Gln Ala Thr Leu Ala Gly Val Ala Phe Gly Glu Lys Thr Val Thr
1235 1240 1245
Ala Ser Leu Ala Asn Asn Gly Ala Ser Asp Asn Lys Thr Val His Phe
1250 1255 1260
Ile Gly Asp Thr Ala Ala Ala Lys Ile Ile Glu Leu Ala Pro Val Pro
1265 1270 1275 1280
Asp Ser Ile Ile Ala Gly Thr Pro Gln Asn Ser Ser Gly Ser Val Ile
1285 1290 1295
Thr Ala Thr Val Val Asp Asn Asn Gly Phe Pro Val Lys Gly Val Thr
1300 1305 1310
Val Asn Phe Thr Ser Asn Ala Ala Thr Ala Glu Met Thr Asn Gly Gly
1315 1320 1325
Gln Ala Val Thr Asn Glu Gln Gly Lys Ala Thr Val Thr Tyr Thr Asn
1330 1335 1340
Thr Arg Ser Ser Ile Glu Ser Gly Ala Arg Pro Asp Thr Val Glu Ala

1345 1350 1355 1360
Ser Leu Glu Asn Gly Ser Ser Thr Leu Ser Thr Ser Ile Asn Val Asn
1365 1370 1375
Ala Asp Ala Ser Thr Ala His Leu Thr Leu Leu Gln Ala Leu Phe Asp
1380 1385 1390
Thr Val Ser Ala Gly Glu Thr Thr Ser Leu Tyr Ile Glu Val Lys Asp
1395 1400 1405
Asn Tyr Gly Asn Gly Val Pro Gln Gln Glu Val Thr Leu Ser Val Ser
1410 1415 1420
Pro Ser Glu Gly Val Thr Pro Ser Asn Asn Ala Ile Tyr Thr Thr Asn
1425 1430 1435 1440
His Asp Gly Asn Phe Tyr Ala Ser Phe Thr Ala Thr Lys Ala Gly Val
1445 1450 1455
Tyr Gln Leu Thr Ala Thr Leu Glu Asn Gly Asp Ser Met Gln Gln Thr
1460 1465 1470
Val Thr Tyr Val Pro Asn Val Ala Asn Ala Glu Ile Thr Leu Ala Ala
1475 1480 1485
Ser Lys Asp Pro Val Ile Ala Asp Asn Asn Asp Leu Thr Thr Leu Thr
1490 1495 1500
Ala Thr Val Ala Asp Thr Glu Gly Asn Ala Ile Ala Asn Thr Glu Val
1505 1510 1515 1520
Thr Phe Thr Leu Pro Glu Asp Val Lys Ala Asn Phe Thr Leu Ser Asp
1525 1530 1535
Gly Gly Lys Val Ile Thr Asp Ala Glu Gly Lys Ala Lys Val Thr Leu
1540 1545 1550
Lys Gly Thr Lys Ala Gly Ala His Thr Val Thr Ala Ser Met Thr Gly
1555 1560 1565
Gly Lys Ser Glu Gln Leu Val Val Asn Phe Ile Ala Asp Thr Leu Thr
1570 1575 1580
Ala Gln Val Asn Leu Asn Val Thr Glu Asp Asn Phe Ile Ala Asn Asn
1585 1590 1595 1600
Val Gly Met Thr Arg Leu Gln Ala Thr Val Thr Asp Gly Asn Gly Asn
1605 1610 1615
Pro Leu Ala Asn Glu Ala Val Thr Phe Thr Leu Pro Ala Asp Val Ser
1620 1625 1630
Ala Ser Phe Thr Leu Gly Gln Gly Gly Ser Ala Ile Thr Asp Ile Asn
1635 1640 1645
Gly Lys Ala Glu Val Thr Leu Ser Gly Thr Lys Ser Gly Thr Tyr Pro
1650 1655 1660
Val Thr Val Ser Val Asn Asn Tyr Gly Val Ser Asp Thr Lys Gln Val
1665 1670 1675 1680
Thr Leu Ile Ala Asp Ala Gly Thr Ala Lys Leu Ala Ser Leu Thr Ser
1685 1690 1695
Val Tyr Ser Phe Val Val Ser Thr Thr Glu Gly Ala Thr Met Thr Ala
1700 1705 1710
Ser Val Thr Asp Ala Asn Gly Asn Pro Val Glu Gly Ile Lys Val Asn
1715 1720 1725
Phe Arg Gly Thr Ser Val Thr Leu Ser Ser Thr Ser Val Glu Thr Asp
1730 1735 1740
Asp Arg Gly Phe Ala Glu Ile Leu Val Thr Ser Thr Glu Val Gly Leu
1745 1750 1755 1760
Lys Thr Val Ser Ala Ser Leu Ala Asp Lys Pro Thr Glu Val Ile Ser
1765 1770 1775
Arg Leu Leu Asn Ala Ser Ala Asp Val Asn Ser Ala Thr Ile Thr Ser
1780 1785 1790
Leu Glu Ile Pro Glu Gly Gln Val Met Val Ala Gln Asp Val Ala Val
1795 1800 1805

Lys Ala His Val Asn Asp Gln Phe Gly Asn Pro Val Ala His Gln Pro
1810 1815 1820
Val Thr Phe Ser Ala Glu Pro Ser Ser Gln Met Ile Ile Ser Gln Asn
1825 1830 1835 1840
Thr Val Ser Thr Asn Thr Gln Gly Val Ala Glu Val Thr Met Thr Pro
1845 1850 1855
Glu Arg Asn Gly Ser Tyr Met Val Lys Ala Ser Leu Pro Asn Gly Ala
1860 1865 1870
Ser Leu Glu Lys Gln Leu Glu Ala Ile Asp Glu Lys Leu Thr Leu Thr
1875 1880 1885
Ala Ser Ser Pro Leu Ile Gly Val Tyr Ala Pro Thr Gly Ala Thr Leu
1890 1895 1900
Thr Ala Thr Leu Thr Ser Ala Asn Gly Thr Pro Val Glu Gly Gln Val
1905 1910 1915 1920
Ile Asn Phe Ser Val Thr Pro Glu Gly Ala Thr Leu Ser Gly Gly Lys
1925 1930 1935
Val Arg Thr Asn Ser Ser Gly Gln Ala Pro Val Val Leu Thr Ser Asn
1940 1945 1950
Lys Val Gly Thr Tyr Thr Val Thr Ala Ser Phe His Asn Gly Val Thr
1955 1960 1965
Ile Gln Thr Gln Thr Thr Val Lys Val Thr Gly Asn Ser Ser Thr Ala
1970 1975 1980
His Val Ala Ser Phe Ile Ala Asp Pro Ser Thr Ile Ala Ala Thr Asn
1985 1990 1995 2000
Thr Asp Leu Ser Thr Leu Lys Ala Thr Val Glu Asp Gly Ser Gly Asn
2005 2010 2015
Leu Ile Glu Gly Leu Thr Val Tyr Phe Ala Leu Lys Ser Gly Ser Ala
2020 2025 2030
Thr Leu Thr Ser Leu Thr Ala Val Thr Asp Gln Asn Gly Ile Ala Thr
2035 2040 2045
Thr Ser Val Lys Gly Ala Met Thr Gly Ser Val Thr Val Ser Ala Val
2050 2055 2060
Thr Thr Ala Gly Gly Met Gln Thr Val Asp Ile Thr Leu Val Ala Gly
2065 2070 2075 2080
Pro Ala Asp Thr Ser Gln Ser Val Leu Lys Ser Asn Arg Ser Ser Leu
2085 2090 2095
Lys Gly Asp Tyr Thr Asp Ser Ala Glu Leu Arg Leu Val Leu His Asp
2100 2105 2110
Ile Ser Gly Asn Pro Ile Lys Val Ser Glu Gly Met Glu Phe Val Gln
2115 2120 2125
Ser Gly Thr Asn Val Pro Tyr Ile Lys Ile Ser Ala Ile Asp Tyr Ser
2130 2135 2140
Leu Asn Ile Asn Gly Asp Tyr Lys Ala Thr Val Thr Gly Gly Gly Glu
2145 2150 2155 2160
Gly Ile Ala Thr Leu Ile Pro Val Leu Asn Gly Val His Gln Ala Gly
2165 2170 2175
Leu Ser Thr Thr Ile Gln Phe Thr Arg Ala Glu Asp Lys Ile Met Ser
2180 2185 2190
Gly Thr Val Ser Val Asn Gly Thr Asp Leu Pro Thr Thr Thr Phe Pro
2195 2200 2205
Ser Gln Gly Phe Thr Gly Ala Tyr Tyr Gln Leu Asn Asn Asp Asn Phe
2210 2215 2220
Ala Pro Gly Lys Thr Ala Ala Asp Tyr Glu Phe Ser Ser Ser Ala Ser
2225 2230 2235 2240
Trp Val Asp Val Asp Ala Thr Gly Lys Val Thr Phe Lys Asn Val Gly
2245 2250 2255
Ser Asn Ser Glu Arg Ile Thr Ala Thr Pro Lys Ser Gly Gly Pro Ser

```
            2260                2265                2270
Tyr Val Tyr Glu Ile Arg Val Lys Ser Trp Trp Val Asn Ala Gly Glu
        2275                2280                2285
Ala Phe Met Ile Tyr Ser Leu Ala Glu Asn Phe Cys Ser Ser Asn Gly
    2290                2295                2300
Tyr Thr Leu Pro Arg Ala Asn Tyr Leu Asn His Cys Ser Ser Arg Gly
2305                2310                2315                2320
Ile Gly Ser Leu Tyr Ser Glu Trp Gly Asp Met Gly His Tyr Thr Thr
                2325                2330                2335
Asp Ala Gly Phe Gln Ser Asn Met Tyr Trp Ser Ser Ser Pro Ala Asn
            2340                2345                2350
Ser Ser Glu Gln Tyr Val Val Ser Leu Ala Thr Gly Asp Gln Ser Val
        2355                2360                2365
Phe Glu Lys Leu Gly Phe Ala Tyr Ala Thr Cys Tyr Lys Asn Leu
    2370                2375                2380
```

<210> 303
<211> 61
<212> PRT
<213> E. Coli

<400> 303

```
Met Ser Lys Gly Ala Leu Tyr Glu Phe Asn Asn Pro Asp Gln Leu Lys
 1               5                  10                  15
Ile Pro Leu Pro His Lys His Ile Ala Ser Thr Phe Asn Asp Ile Met
            20                  25                  30
Ser Lys Asp Val Gly Tyr Ala Tyr Val Ser Leu Leu Tyr Ala Cys Pro
        35                  40                  45
Leu Lys Thr His Ser Leu Arg Leu Asn Pro Phe Ser Lys
    50                  55                  60
```

<210> 304
<211> 398
<212> PRT
<213> E. Coli

<400> 304

```
Met Gln Val Ala Glu Gln Arg Ile Gln Leu Ala Glu Ala Gln Ala Lys
 1               5                  10                  15
Ala Val Ala Thr Gln Asp Gly Pro Gln Ile Asp Phe Ser Ala Asp Met
            20                  25                  30
Glu Arg Gln Lys Met Ser Ala Glu Gly Leu Met Gly Pro Phe Ala Leu
        35                  40                  45
Asn Asp Pro Ala Ala Gly Thr Thr Gly Pro Trp Tyr Thr Asn Gly Thr
    50                  55                  60
Phe Gly Leu Thr Ala Gly Trp His Leu Asp Ile Trp Gly Lys Asn Arg
65                  70                  75                  80
Ala Glu Val Thr Ala Arg Leu Gly Thr Val Lys Ala Arg Ala Ala Glu
                85                  90                  95
Arg Glu Gln Thr Arg Gln Leu Leu Ala Gly Ser Val Ala Arg Leu Tyr
            100                 105                 110
Trp Glu Trp Gln Thr Gln Ala Ala Leu Asn Thr Val Leu Gln Gln Ile
        115                 120                 125
Glu Lys Glu Gln Asn Thr Ile Ile Ala Thr Asp Arg Gln Leu Tyr Gln
    130                 135                 140
```

```
Asn Gly Ile Thr Ser Ser Val Glu Gly Val Glu Thr Asp Ile Asn Ala
145                 150                 155                 160
Ser Lys Thr Arg Gln Gln Leu Asn Asp Val Ala Gly Lys Met Lys Ile
                165                 170                 175
Ile Glu Ala Arg Leu Ser Ala Leu Thr Asn Asn Gln Thr Lys Ser Leu
            180                 185                 190
Lys Leu Lys Pro Val Ala Leu Pro Lys Val Ala Ser Gln Leu Pro Asp
        195                 200                 205
Glu Leu Gly Tyr Ser Leu Leu Ala Arg Arg Ala Asp Leu Gln Ala Ala
    210                 215                 220
His Trp Tyr Val Glu Ser Ser Leu Ser Thr Ile Asp Ala Ala Lys Ala
225                 230                 235                 240
Ala Phe Tyr Pro Asp Ile Asn Leu Met Ala Phe Leu Gln Gln Asp Ala
                245                 250                 255
Leu His Leu Ser Asp Leu Phe Arg His Ser Ala Gln Gln Met Gly Val
            260                 265                 270
Thr Ala Gly Leu Thr Leu Pro Ile Phe Asp Ser Gly Arg Leu Asn Ala
        275                 280                 285
Asn Leu Asp Ile Ala Lys Ala Glu Ser Asn Leu Ser Ile Ala Ser Tyr
    290                 295                 300
Asn Lys Ala Val Val Glu Ala Val Asn Asp Val Ala Arg Ala Ala Ser
305                 310                 315                 320
Gln Val Gln Thr Leu Ala Glu Lys Asn Gln His Gln Ala Gln Ile Glu
                325                 330                 335
Arg Asp Ala Leu Arg Val Val Gly Leu Ala Gln Ala Arg Phe Asn Ala
            340                 345                 350
Gly Ile Ile Ala Gly Ser Arg Val Ser Glu Ala Arg Ile Pro Ala Leu
        355                 360                 365
Arg Glu Arg Ala Asn Gly Leu Leu Leu Gln Gly Gln Trp Leu Asp Ala
    370                 375                 380
Ser Ile Gln Leu Thr Gly Ala Leu Gly Gly Gly Tyr Lys Arg
385                 390                 395
```

<210> 305
<211> 96
<212> PRT
<213> E. Coli

<400> 305

```
Met Tyr Cys His Ala Lys Leu Lys Asn Ile Ser Gln His Thr Val Ile
 1               5                  10                  15
Ser Ala His Leu Phe Leu Pro Asp Tyr Ser Pro Met Asn Arg Asp Ser
            20                  25                  30
Phe Tyr Pro Ala Ile Ala Cys Phe Pro Leu Leu Leu Met Leu Ala Gly
        35                  40                  45
Cys Ala Pro Met His Glu Thr Arg Gln Ala Leu Ser Gln Gln Thr Pro
    50                  55                  60
Ala Ala Gln Val Asp Thr Ala Leu Pro Thr Ala Leu Lys Met Val Gly
65                  70                  75                  80
Gln Thr Ala Asn Gly Gly Trp Ser Ile Thr Ile Ile Asn Ser Leu Pro
                85                  90                  95
```

<210> 306
<211> 315
<212> PRT

<213> E. Coli

<400> 306

```
Met Arg Val Leu Leu Ala Pro Met Glu Gly Val Leu Asp Ser Leu Val
 1               5                  10                  15
Arg Glu Leu Leu Thr Glu Val Asn Asp Tyr Asp Leu Cys Ile Thr Glu
            20                  25                  30
Phe Val Arg Val Val Asp Gln Leu Leu Pro Val Lys Val Phe His Arg
        35                  40                  45
Ile Cys Pro Glu Leu Gln Asn Ala Ser Arg Thr Pro Ser Gly Thr Leu
    50                  55                  60
Val Arg Val Gln Leu Leu Gly Gln Phe Pro Gln Trp Leu Ala Glu Asn
65                  70                  75                  80
Ala Ala Arg Ala Val Glu Leu Gly Ser Trp Gly Val Asp Leu Asn Cys
                85                  90                  95
Gly Cys Pro Ser Lys Thr Val Asn Gly Ser Gly Gly Gly Ala Thr Leu
            100                 105                 110
Leu Lys Asp Pro Glu Leu Ile Tyr Gln Gly Ala Lys Ala Met Arg Glu
        115                 120                 125
Ala Val Pro Ala His Leu Pro Val Ser Val Lys Val Arg Leu Gly Trp
    130                 135                 140
Asp Ser Gly Glu Lys Lys Phe Glu Ile Ala Asp Ala Val Gln Gln Ala
145                 150                 155                 160
Gly Ala Thr Glu Leu Val Val His Gly Arg Thr Lys Glu Gln Gly Tyr
                165                 170                 175
Arg Ala Glu His Ile Asp Trp Gln Ala Ile Gly Asp Ile Arg Gln Arg
            180                 185                 190
Leu Asn Ile Pro Val Ile Ala Asn Gly Glu Ile Trp Asp Trp Gln Ser
        195                 200                 205
Ala Gln Gln Cys Met Ala Ile Ser Gly Cys Asp Ala Val Met Ile Gly
    210                 215                 220
Arg Gly Ala Leu Asn Ile Pro Asn Leu Ser Arg Val Val Lys Tyr Asn
225                 230                 235                 240
Glu Pro Arg Met Pro Trp Pro Glu Val Val Ala Leu Leu Gln Lys Tyr
                245                 250                 255
Thr Arg Leu Glu Lys Gln Gly Asp Thr Gly Leu Tyr His Val Ala Arg
            260                 265                 270
Ile Lys Gln Trp Leu Ser Tyr Leu Arg Lys Glu Tyr Asp Glu Ala Thr
        275                 280                 285
Glu Leu Phe Gln His Val Arg Val Leu Asn Asn Ser Pro Asp Ile Ala
    290                 295                 300
Arg Ala Ile Gln Ala Ile Asp Ile Glu Lys Leu
305                 310                 315
```

<210> 307
<211> 296
<212> PRT
<213> E. Coli

<400> 307

```
Met Thr Ile Ser Thr Thr Ser Thr Pro His Asp Ala Val Phe Lys Ser
 1               5                  10                  15
Phe Leu Arg His Pro Asp Thr Ala Arg Asp Phe Ile Asp Ile His Leu
            20                  25                  30
Pro Ala Pro Leu Arg Lys Leu Cys Asp Leu Thr Thr Leu Lys Leu Glu
        35                  40                  45
```

```
Pro Asn Ser Phe Ile Asp Glu Asp Leu Arg Gln Tyr Tyr Ser Asp Leu
    50                  55                  60
Leu Trp Ser Val Lys Thr Gln Glu Gly Val Gly Tyr Ile Tyr Val Val
65                  70                  75                  80
Ile Glu His Gln Ser Lys Pro Glu Glu Leu Met Ala Phe Arg Met Met
                85                  90                  95
Arg Tyr Ser Ile Ala Ala Met Gln Asn His Leu Asp Ala Gly Tyr Lys
            100                 105                 110
Glu Leu Pro Leu Val Leu Pro Met Leu Phe Tyr His Gly Cys Arg Ser
        115                 120                 125
Pro Tyr Pro Tyr Ser Leu Cys Trp Leu Asp Glu Phe Ala Glu Pro Ala
    130                 135                 140
Ile Ala Arg Lys Ile Tyr Ser Ser Ala Phe Pro Leu Val Asp Ile Thr
145                 150                 155                 160
Val Val Pro Asp Asp Glu Ile Met Gln His Arg Lys Met Ala Leu Leu
                165                 170                 175
Glu Leu Ile Gln Lys His Ile Arg Gln Arg Asp Leu Leu Gly Leu Val
            180                 185                 190
Asp Gln Ile Val Ser Leu Leu Val Thr Gly Asn Thr Asn Asp Arg Gln
        195                 200                 205
Leu Lys Ala Leu Phe Asn Tyr Val Leu Gln Thr Gly Asp Ala Gln Arg
    210                 215                 220
Phe Arg Ala Phe Ile Gly Glu Ile Ala Glu Arg Ala Pro Gln Glu Lys
225                 230                 235                 240
Glu Lys Leu Met Thr Ile Ala Asp Arg Leu Arg Glu Glu Gly Ala Met
                245                 250                 255
Gln Gly Lys His Glu Glu Ala Leu Arg Ile Ala Gln Glu Met Leu Asp
            260                 265                 270
Arg Gly Leu Asp Arg Glu Leu Val Met Met Val Thr Arg Leu Ser Pro
        275                 280                 285
Asp Asp Leu Ile Ala Gln Ser His
    290                 295
```

<210> 308
<211> 555
<212> PRT
<213> E. Coli

<400> 308

```
Met Ala Gln Phe Val Tyr Thr Met His Arg Val Gly Lys Val Val Pro
 1               5                  10                  15
Pro Lys Arg His Ile Leu Lys Asn Ile Ser Leu Ser Phe Phe Pro Gly
            20                  25                  30
Ala Lys Ile Gly Val Leu Gly Leu Asn Gly Ala Gly Lys Ser Thr Leu
        35                  40                  45
Leu Arg Ile Met Ala Gly Ile Asp Lys Asp Ile Glu Gly Glu Ala Arg
    50                  55                  60
Pro Gln Pro Asp Ile Lys Ile Gly Tyr Leu Pro Gln Glu Pro Gln Leu
65                  70                  75                  80
Asn Pro Glu His Thr Val Arg Glu Ser Ile Glu Glu Ala Val Ser Glu
                85                  90                  95
Val Val Asn Ala Leu Lys Arg Leu Asp Glu Val Tyr Ala Leu Tyr Ala
            100                 105                 110
Asp Pro Asp Ala Asp Phe Asp Lys Leu Ala Ala Glu Gln Gly Arg Leu
        115                 120                 125
Glu Glu Ile Ile Gln Ala His Asp Gly His Asn Leu Asn Val Gln Leu
```

```
    130                 135                 140
Glu Arg Ala Ala Asp Ala Leu Arg Leu Pro Asp Trp Asp Ala Lys Ile
145                 150                 155                 160
Ala Asn Leu Ser Gly Gly Glu Arg Arg Arg Val Ala Leu Cys Arg Leu
                165                 170                 175
Leu Leu Glu Lys Pro Asp Met Leu Leu Leu Asp Glu Pro Thr Asn His
            180                 185                 190
Leu Asp Ala Glu Ser Val Ala Trp Leu Glu Arg Phe Leu His Asp Phe
        195                 200                 205
Glu Gly Thr Val Val Ala Ile Thr His Asp Arg Tyr Phe Leu Asp Asn
    210                 215                 220
Val Ala Gly Trp Ile Leu Glu Leu Asp Arg Gly Glu Gly Ile Pro Trp
225                 230                 235                 240
Glu Gly Asn Tyr Ser Ser Trp Leu Glu Gln Lys Asp Gln Arg Leu Ala
                245                 250                 255
Gln Glu Ala Ser Gln Glu Ala Ala Arg Arg Lys Ser Ile Glu Lys Glu
            260                 265                 270
Leu Glu Trp Val Arg Gln Gly Thr Lys Gly Arg Gln Ser Lys Gly Lys
        275                 280                 285
Ala Arg Leu Ala Arg Phe Glu Glu Leu Asn Ser Thr Glu Tyr Gln Lys
    290                 295                 300
Arg Asn Glu Thr Asn Glu Leu Phe Ile Pro Pro Gly Pro Arg Leu Gly
305                 310                 315                 320
Asp Lys Val Leu Glu Val Ser Asn Leu Arg Lys Ser Tyr Gly Asp Arg
                325                 330                 335
Leu Leu Ile Asp Asp Leu Ser Phe Ser Ile Pro Lys Gly Ala Ile Val
            340                 345                 350
Gly Ile Ile Gly Pro Asn Gly Ala Gly Lys Ser Thr Leu Phe Arg Met
        355                 360                 365
Ile Ser Gly Gln Glu Gln Pro Asp Ser Gly Thr Ile Thr Leu Gly Glu
    370                 375                 380
Thr Val Lys Leu Ala Ser Val Asp Gln Phe Arg Asp Ser Met Asp Asn
385                 390                 395                 400
Ser Lys Thr Val Trp Glu Glu Val Ser Gly Gly Leu Asp Ile Met Lys
                405                 410                 415
Ile Gly Asn Thr Glu Met Pro Ser Arg Ala Tyr Val Gly Arg Phe Asn
            420                 425                 430
Phe Lys Gly Val Asp Gln Gly Lys Arg Val Gly Glu Leu Ser Gly Gly
        435                 440                 445
Glu Arg Gly Arg Leu His Leu Ala Lys Leu Leu Gln Val Gly Gly Asn
    450                 455                 460
Met Leu Leu Leu Asp Glu Pro Thr Asn Asp Leu Asp Ile Glu Thr Leu
465                 470                 475                 480
Arg Ala Leu Glu Asn Ala Leu Leu Glu Phe Pro Gly Cys Ala Met Val
                485                 490                 495
Ile Ser His Asp Arg Trp Phe Leu Asp Arg Ile Ala Thr His Ile Leu
            500                 505                 510
Asp Tyr Gln Asp Glu Gly Lys Val Glu Phe Phe Glu Gly Asn Phe Thr
        515                 520                 525
Glu Tyr Glu Glu Tyr Lys Lys Arg Thr Leu Gly Ala Asp Ala Leu Glu
    530                 535                 540
Pro Lys Arg Ile Lys Tyr Lys Arg Ile Ala Lys
545                 550                 555
```

<210> 309

<211> 173
<212> PRT
<213> E. Coli

<400> 309

```
Met Ser Lys Pro Lys Tyr Pro Phe Glu Lys Arg Leu Glu Val Val Asn
 1               5                  10                  15
His Tyr Phe Thr Thr Asp Asp Gly Tyr Arg Ile Ile Ser Ala Arg Phe
            20                  25                  30
Gly Val Pro Arg Thr Gln Val Arg Thr Trp Val Ala Leu Tyr Glu Lys
        35                  40                  45
His Gly Glu Lys Gly Leu Ile Pro Lys Pro Lys Gly Val Ser Ala Asp
    50                  55                  60
Pro Glu Leu Arg Ile Lys Val Val Lys Ala Val Ile Glu Gln His Met
65                  70                  75                  80
Ser Leu Asn Gln Ala Ala Ala His Phe Met Leu Ala Gly Ser Gly Ser
                85                  90                  95
Val Ala Arg Trp Leu Lys Val Tyr Glu Glu Arg Gly Glu Ala Gly Leu
            100                 105                 110
Arg Ala Leu Lys Ile Gly Thr Lys Arg Asn Ile Ala Ile Ser Val Asp
        115                 120                 125
Pro Glu Lys Ala Ala Ser Ala Leu Glu Leu Ser Lys Asp Arg Arg Ile
    130                 135                 140
Glu Asp Leu Glu Arg Gln Val Arg Phe Leu Glu Thr Arg Leu Met Tyr
145                 150                 155                 160
Leu Lys Lys Leu Lys Ala Leu Ala His Pro Thr Lys Lys
                165                 170
```

<210> 310
<211> 283
<212> PRT
<213> E. Coli

<400> 310

```
Met Lys Val Leu Asn Glu Leu Arg Gln Phe Tyr Pro Leu Asp Glu Leu
 1               5                  10                  15
Leu Arg Ala Ala Glu Ile Pro Arg Ser Thr Phe Tyr Tyr His Leu Lys
            20                  25                  30
Ala Leu Ser Lys Pro Asp Lys Tyr Ala Asp Val Lys Lys Arg Ile Ser
        35                  40                  45
Glu Ile Tyr His Glu Asn Arg Gly Arg Tyr Gly Tyr Arg Arg Val Thr
    50                  55                  60
Leu Ser Leu His Arg Glu Gly Lys Gln Ile Asn His Lys Ala Val Gln
65                  70                  75                  80
Arg Leu Met Gly Thr Leu Ser Leu Lys Ala Ala Ile Lys Val Lys Arg
                85                  90                  95
Tyr Arg Ser Tyr Arg Gly Glu Val Gly Gln Thr Ala Pro Asn Val Leu
            100                 105                 110
Gln Arg Asp Phe Lys Ala Thr Arg Pro Asn Glu Lys Trp Val Thr Asp
        115                 120                 125
Val Thr Glu Phe Ala Val Asn Gly Arg Lys Leu Tyr Leu Ser Pro Val
    130                 135                 140
Ile Asp Leu Phe Asn Asn Glu Val Ile Ser Tyr Ser Leu Ser Glu Arg
145                 150                 155                 160
Pro Val Met Asn Met Val Glu Asn Met Leu Asp Gln Ala Phe Lys Lys
                165                 170                 175
```

```
Leu Asn Pro His Glu His Pro Val Leu His Ser Asp Gln Gly Trp Gln
            180                 185                 190
Tyr Arg Met Arg Arg Tyr Gln Asn Ile Leu Lys Glu His Gly Ile Lys
        195                 200                 205
Gln Ser Met Ser Arg Lys Gly Asn Cys Leu Asp Asn Ala Val Val Glu
    210                 215                 220
Cys Phe Phe Gly Thr Leu Lys Ser Glu Cys Phe Tyr Leu Asp Glu Phe
225                 230                 235                 240
Ser Asn Ile Ser Glu Leu Lys Asp Ala Val Thr Glu Tyr Ile Glu Tyr
                245                 250                 255
Tyr Asn Ser Arg Arg Ile Ser Leu Lys Leu Lys Gly Leu Thr Pro Ile
            260                 265                 270
Glu Tyr Arg Asn Gln Thr Tyr Met Pro Arg Val
        275                 280

      <210> 311
      <211> 38
      <212> PRT
      <213> E. Coli

      <400> 311
Met Lys Val Arg Ala Ser Val Lys Lys Leu Cys Arg Asn Cys Lys Ile
 1               5                  10                  15
Val Lys Arg Asp Gly Val Ile Arg Val Ile Cys Ser Ala Glu Pro Lys
            20                  25                  30
His Lys Gln Arg Gln Gly
        35



      <210> 312
      <211> 443
      <212> PRT
      <213> E. Coli

      <400> 312
Met Ala Lys Gln Pro Gly Leu Asp Phe Gln Ser Ala Lys Gly Gly Leu
 1               5                  10                  15
Gly Glu Leu Lys Arg Arg Leu Leu Phe Val Ile Gly Ala Leu Ile Val
            20                  25                  30
Phe Arg Ile Gly Ser Phe Ile Pro Ile Pro Gly Ile Asp Ala Ala Val
        35                  40                  45
Leu Ala Lys Leu Leu Glu Gln Gln Arg Gly Thr Ile Ile Glu Met Phe
    50                  55                  60
Asn Met Phe Ser Gly Gly Ala Leu Ser Arg Ala Ser Ile Phe Ala Leu
65                  70                  75                  80
Gly Ile Met Pro Tyr Ile Ser Ala Ser Ile Ile Ile Gln Leu Leu Thr
                85                  90                  95
Val Val His Pro Thr Leu Ala Glu Ile Lys Lys Glu Gly Glu Ser Gly
            100                 105                 110
Arg Arg Lys Ile Ser Gln Tyr Thr Arg Tyr Gly Thr Leu Val Leu Ala
        115                 120                 125
Ile Phe Gln Ser Ile Gly Ile Ala Thr Gly Leu Pro Asn Met Pro Gly
    130                 135                 140
Met Gln Gly Leu Val Ile Asn Pro Gly Phe Ala Phe Tyr Phe Thr Ala
145                 150                 155                 160
Val Val Ser Leu Val Thr Gly Thr Met Phe Leu Met Trp Leu Gly Glu
                165                 170                 175
```

Gln Ile Thr Glu Arg Gly Ile Gly Asn Gly Ile Ser Ile Ile Ile Phe
180 185 190
Ala Gly Ile Val Ala Gly Leu Pro Pro Ala Ile Ala His Thr Ile Glu
195 200 205
Gln Ala Arg Gln Gly Asp Leu His Phe Leu Val Leu Leu Leu Val Ala
210 215 220
Val Leu Val Phe Ala Val Thr Phe Phe Val Val Phe Val Glu Arg Gly
225 230 235 240
Gln Arg Arg Ile Val Val Asn Tyr Ala Lys Arg Gln Gln Gly Arg Arg
245 250 255
Val Tyr Ala Ala Gln Ser Thr His Leu Pro Leu Lys Val Asn Met Ala
260 265 270
Gly Val Ile Pro Ala Ile Phe Ala Ser Ser Ile Ile Leu Phe Pro Ala
275 280 285
Thr Ile Ala Ser Trp Phe Gly Gly Gly Thr Gly Trp Asn Trp Leu Thr
290 295 300
Thr Ile Ser Leu Tyr Leu Gln Pro Gly Gln Pro Leu Tyr Val Leu Leu
305 310 315 320
Tyr Ala Ser Ala Ile Ile Phe Phe Cys Phe Phe Tyr Thr Ala Leu Val
325 330 335
Phe Asn Pro Arg Glu Thr Ala Asp Asn Leu Lys Lys Ser Gly Ala Phe
340 345 350
Val Pro Gly Ile Arg Pro Gly Glu Gln Thr Ala Lys Tyr Ile Asp Lys
355 360 365
Val Met Thr Arg Leu Thr Leu Val Gly Ala Leu Tyr Ile Thr Phe Ile
370 375 380
Cys Leu Ile Pro Glu Phe Met Arg Asp Ala Met Lys Val Pro Phe Tyr
385 390 395 400
Phe Gly Gly Thr Ser Leu Leu Ile Val Val Val Val Ile Met Asp Phe
405 410 415
Met Ala Gln Val Gln Thr Leu Met Met Ser Ser Gln Tyr Glu Ser Ala
420 425 430
Leu Lys Lys Ala Asn Leu Lys Gly Tyr Gly Arg
435 440

<210> 313
<211> 144
<212> PRT
<213> E. Coli

<400> 313
Met Arg Leu Asn Thr Leu Ser Pro Ala Glu Gly Ser Lys Lys Ala Gly
1 5 10 15
Lys Arg Leu Gly Arg Gly Ile Gly Ser Gly Leu Gly Lys Thr Gly Gly
20 25 30
Arg Gly His Lys Gly Gln Lys Ser Arg Ser Gly Gly Gly Val Arg Arg
35 40 45
Gly Phe Glu Gly Gly Gln Met Pro Leu Tyr Arg Arg Leu Pro Lys Phe
50 55 60
Gly Phe Thr Ser Arg Lys Ala Ala Ile Thr Ala Glu Ile Arg Leu Ser
65 70 75 80
Asp Leu Ala Lys Val Glu Gly Gly Val Val Asp Leu Asn Thr Leu Lys
85 90 95
Ala Ala Asn Ile Ile Gly Ile Gln Ile Glu Phe Ala Lys Val Ile Leu
100 105 110

```
Ala Gly Glu Val Thr Thr Pro Val Thr Val Arg Gly Leu Arg Val Thr
        115                 120                 125
Lys Gly Ala Arg Ala Ala Ile Glu Ala Ala Gly Gly Lys Ile Glu Glu
    130                 135                 140
```

<210> 314
<211> 59
<212> PRT
<213> E. Coli

<400> 314

```
Met Ala Lys Thr Ile Lys Ile Thr Gln Thr Arg Ser Ala Ile Gly Arg
 1               5                  10                  15
Leu Pro Lys His Lys Ala Thr Leu Leu Gly Leu Gly Leu Arg Arg Ile
            20                  25                  30
Gly His Thr Val Glu Arg Glu Asp Thr Pro Ala Ile Arg Gly Met Ile
        35                  40                  45
Asn Ala Val Ser Phe Met Val Lys Val Glu Glu
    50                  55
```

<210> 315
<211> 167
<212> PRT
<213> E. Coli

<400> 315

```
Met Ala His Ile Glu Lys Gln Ala Gly Glu Leu Gln Glu Lys Leu Ile
 1               5                  10                  15
Ala Val Asn Arg Val Ser Lys Thr Val Lys Gly Gly Arg Ile Phe Ser
            20                  25                  30
Phe Thr Ala Leu Thr Val Val Gly Asp Gly Asn Gly Arg Val Gly Phe
        35                  40                  45
Gly Tyr Gly Lys Ala Arg Glu Val Pro Ala Ala Ile Gln Lys Ala Met
    50                  55                  60
Glu Lys Ala Arg Arg Asn Met Ile Asn Val Ala Leu Asn Asn Gly Thr
65                  70                  75                  80
Leu Gln His Pro Val Lys Gly Val His Thr Gly Ser Arg Val Phe Met
                85                  90                  95
Gln Pro Ala Ser Glu Gly Thr Gly Ile Ile Ala Gly Gly Ala Met Arg
            100                 105                 110
Ala Val Leu Glu Val Ala Gly Val His Asn Val Leu Ala Lys Ala Tyr
        115                 120                 125
Gly Ser Thr Asn Pro Ile Asn Val Val Arg Ala Thr Ile Asp Gly Leu
    130                 135                 140
Glu Asn Met Asn Ser Pro Glu Met Val Ala Ala Lys Arg Gly Lys Ser
145                 150                 155                 160
Val Glu Glu Ile Leu Gly Lys
                165
```

<210> 316
<211> 117
<212> PRT
<213> E. Coli

<400> 316

```
Met Asp Lys Lys Ser Ala Arg Ile Arg Arg Ala Thr Arg Ala Arg Arg
 1               5                  10                  15
Lys Leu Gln Glu Leu Gly Ala Thr Arg Leu Val Val His Arg Thr Pro
            20                  25                  30
Arg His Ile Tyr Ala Gln Val Ile Ala Pro Asn Gly Ser Glu Val Leu
        35                  40                  45
Val Ala Ala Ser Thr Val Glu Lys Ala Ile Ala Glu Gln Leu Lys Tyr
    50                  55                  60
Thr Gly Asn Lys Asp Ala Ala Ala Ala Val Gly Lys Ala Val Ala Glu
65                  70                  75                  80
Arg Ala Leu Glu Lys Gly Ile Lys Asp Val Ser Phe Asp Arg Ser Gly
                85                  90                  95
Phe Gln Tyr His Gly Arg Val Gln Ala Leu Ala Asp Ala Ala Arg Glu
            100                 105                 110
Ala Gly Leu Gln Phe
        115
```

<210> 317
<211> 177
<212> PRT
<213> E. Coli

<400> 317

```
Met Ser Arg Val Ala Lys Ala Pro Val Val Val Pro Ala Gly Val Asp
 1               5                  10                  15
Val Lys Ile Asn Gly Gln Val Ile Thr Ile Lys Gly Lys Asn Gly Glu
            20                  25                  30
Leu Thr Arg Thr Leu Asn Asp Ala Val Glu Val Lys His Ala Asp Asn
        35                  40                  45
Thr Leu Thr Phe Gly Pro Arg Asp Gly Tyr Ala Asp Gly Trp Ala Gln
    50                  55                  60
Ala Gly Thr Ala Arg Ala Leu Leu Asn Ser Met Val Ile Gly Val Thr
65                  70                  75                  80
Glu Gly Phe Thr Lys Lys Leu Gln Leu Val Gly Val Gly Tyr Arg Ala
                85                  90                  95
Ala Val Lys Gly Asn Val Ile Asn Leu Ser Leu Gly Phe Ser His Pro
            100                 105                 110
Val Asp His Gln Leu Pro Ala Gly Ile Thr Ala Glu Cys Pro Thr Gln
        115                 120                 125
Thr Glu Ile Val Leu Lys Gly Ala Asp Lys Gln Val Ile Gly Gln Val
    130                 135                 140
Ala Ala Asp Leu Arg Ala Tyr Arg Arg Pro Glu Pro Tyr Lys Gly Lys
145                 150                 155                 160
Gly Val Arg Tyr Ala Asp Glu Val Val Arg Thr Lys Glu Ala Lys Lys
                165                 170                 175
Lys
```

<210> 318
<211> 130
<212> PRT
<213> E. Coli

<400> 318

```
Met Ser Met Gln Asp Pro Ile Ala Asp Met Leu Thr Arg Ile Arg Asn
 1               5                  10                  15
Gly Gln Ala Ala Asn Lys Ala Ala Val Thr Met Pro Ser Ser Lys Leu
            20                  25                  30
Lys Val Ala Ile Ala Asn Val Leu Lys Glu Glu Gly Phe Ile Glu Asp
        35                  40                  45
Phe Lys Val Glu Gly Asp Thr Lys Pro Glu Leu Glu Leu Thr Leu Lys
    50                  55                  60
Tyr Phe Gln Gly Lys Ala Val Val Glu Ser Ile Gln Arg Val Ser Arg
65                  70                  75                  80
Pro Gly Leu Arg Ile Tyr Lys Arg Lys Asp Glu Leu Pro Lys Val Met
                85                  90                  95
Ala Gly Leu Gly Ile Ala Val Val Ser Thr Ser Lys Gly Val Met Thr
            100                 105                 110
Asp Arg Ala Ala Arg Gln Ala Gly Leu Gly Gly Glu Ile Ile Cys Tyr
        115                 120                 125
Val Ala
    130
```

<210> 319
<211> 101
<212> PRT
<213> E. Coli

<400> 319

```
Met Ala Lys Gln Ser Met Lys Ala Arg Glu Val Lys Arg Val Ala Leu
 1               5                  10                  15
Ala Asp Lys Tyr Phe Ala Lys Arg Ala Glu Leu Lys Ala Ile Ile Ser
            20                  25                  30
Asp Val Asn Ala Ser Asp Glu Asp Arg Trp Asn Ala Val Leu Lys Leu
        35                  40                  45
Gln Thr Leu Pro Arg Asp Ser Ser Pro Ser Arg Gln Arg Asn Arg Cys
    50                  55                  60
Arg Gln Thr Gly Arg Pro His Gly Phe Leu Arg Lys Phe Gly Leu Ser
65                  70                  75                  80
Arg Ile Lys Val Arg Glu Ala Ala Met Arg Gly Glu Ile Pro Gly Leu
                85                  90                  95
Lys Lys Ala Ser Trp
            100
```

<210> 320
<211> 179
<212> PRT
<213> E. Coli

<400> 320

```
Met Ala Lys Leu His Asp Tyr Tyr Lys Asp Glu Val Val Lys Lys Leu
 1               5                  10                  15
Met Thr Glu Phe Asn Tyr Asn Ser Val Met Gln Val Pro Arg Val Glu
            20                  25                  30
Lys Ile Thr Leu Asn Met Gly Val Gly Glu Ala Ile Ala Asp Lys Lys
        35                  40                  45
Leu Leu Asp Asn Ala Ala Ala Asp Leu Ala Ala Ile Ser Gly Gln Lys
```

```
    50                  55                  60
Pro Leu Ile Thr Lys Ala Arg Lys Ser Val Ala Gly Phe Lys Ile Arg
65                  70                  75                  80
Gln Gly Tyr Pro Ile Gly Cys Lys Val Thr Leu Arg Gly Glu Arg Met
                85                  90                  95
Trp Glu Phe Phe Glu Arg Leu Ile Thr Ile Ala Val Pro Arg Ile Arg
            100                 105                 110
Asp Phe Arg Gly Leu Ser Ala Lys Ser Phe Asp Gly Arg Gly Asn Tyr
        115                 120                 125
Ser Met Gly Val Arg Glu Gln Ile Ile Phe Pro Glu Ile Asp Tyr Asp
    130                 135                 140
Lys Val Asp Arg Val Arg Gly Leu Asp Ile Thr Ile Thr Thr Thr Ala
145                 150                 155                 160
Lys Ser Asp Glu Glu Gly Arg Ala Leu Leu Ala Ala Phe Asp Phe Pro
                165                 170                 175
Phe Arg Lys
```

<210> 321Z
<211> 104
<212> PRT
<213> E. Coli

<400> 321

```
Met Ala Ala Lys Ile Arg Arg Asp Asp Glu Val Ile Val Leu Thr Gly
 1               5                  10                  15
Lys Asp Lys Gly Lys Arg Gly Lys Val Lys Asn Val Leu Ser Ser Gly
            20                  25                  30
Lys Val Ile Val Glu Gly Ile Asn Leu Val Lys Lys His Gln Lys Pro
        35                  40                  45
Val Pro Ala Leu Asn Gln Pro Gly Gly Ile Val Glu Lys Glu Ala Ala
    50                  55                  60
Ile Gln Val Ser Asn Val Ala Ile Phe Asn Ala Ala Thr Gly Lys Ala
65                  70                  75                  80
Asp Arg Val Gly Phe Arg Phe Glu Asp Gly Lys Lys Val Arg Phe Phe
                85                  90                  95
Lys Ser Asn Ser Glu Thr Ile Lys
            100
```

<210> 322
<211> 123
<212> PRT
<213> E. Coli

<400> 322

```
Met Ile Gln Glu Gln Thr Met Leu Asn Val Ala Asp Asn Ser Gly Ala
 1               5                  10                  15
Arg Arg Val Met Cys Ile Lys Val Leu Gly Gly Ser His Arg Arg Tyr
            20                  25                  30
Ala Gly Val Gly Asp Ile Ile Lys Ile Thr Ile Lys Glu Ala Ile Pro
        35                  40                  45
Arg Gly Lys Val Lys Lys Gly Asp Val Leu Lys Ala Val Val Val Arg
    50                  55                  60
Thr Lys Lys Gly Val Arg Arg Pro Asp Gly Ser Val Ile Arg Phe Asp
65                  70                  75                  80
```

```
Gly Asn Ala Cys Val Leu Leu Asn Asn Asn Ser Glu Gln Pro Ile Gly
                85                  90                  95
Thr Arg Ile Phe Gly Pro Val Thr Arg Glu Leu Arg Ser Glu Lys Phe
            100                 105                 110
Met Lys Ile Ile Ser Leu Ala Pro Glu Val Leu
        115                 120
```

<210> 323
<211> 188
<212> PRT
<213> E. Coli

<400> 323

```
Met Phe Lys Gly Gln Lys Thr Leu Ala Ala Leu Ala Val Ser Leu Leu
 1               5                  10                  15
Phe Thr Ala Pro Val Tyr Ala Ala Asp Glu Gly Ser Gly Glu Ile His
            20                  25                  30
Phe Lys Gly Glu Val Ile Glu Ala Pro Cys Glu Ile His Pro Glu Asp
        35                  40                  45
Ile Asp Lys Asn Ile Asp Leu Gly Gln Val Thr Thr Thr His Ile Asn
    50                  55                  60
Arg Glu His His Ser Asn Lys Val Ala Val Asp Ile Arg Leu Ile Asn
65                  70                  75                  80
Cys Asp Leu Pro Ala Ser Asp Asn Gly Ser Gly Met Pro Val Ser Lys
                85                  90                  95
Val Gly Val Thr Phe Asp Ser Thr Ala Lys Thr Thr Gly Ala Thr Pro
            100                 105                 110
Leu Leu Ser Asn Thr Ser Ala Gly Glu Ala Thr Gly Val Gly Val Arg
        115                 120                 125
Leu Met Asp Lys Asn Asp Gly Asn Ile Val Leu Gly Ser Ala Ala Pro
    130                 135                 140
Asp Leu Asp Leu Asp Ala Ser Ser Ser Glu Gln Thr Leu Asn Phe Phe
145                 150                 155                 160
Ala Trp Met Glu Gln Ile Asp Asn Ala Val Asp Val Thr Ala Gly Glu
                165                 170                 175
Val Thr Ala Asn Ala Thr Tyr Val Leu Asp Tyr Lys
            180                 185
```

<210> 324
<211> 427
<212> PRT
<213> E. Coli

<400> 324

```
Met Ala Asp Thr Lys Ala Lys Leu Thr Leu Asn Gly Asp Thr Ala Val
 1               5                  10                  15
Glu Leu Asp Val Leu Lys Gly Thr Leu Gly Gln Asp Val Ile Asp Ile
            20                  25                  30
Arg Thr Leu Gly Ser Lys Gly Val Phe Thr Phe Asp Pro Gly Phe Thr
        35                  40                  45
Ser Thr Ala Ser Cys Glu Ser Lys Ile Thr Phe Ile Asp Gly Asp Glu
    50                  55                  60
Gly Ile Leu Leu His Arg Gly Phe Pro Ile Asp Gln Leu Ala Thr Asp
65                  70                  75                  80
Ser Asn Tyr Leu Glu Val Cys Tyr Ile Leu Leu Asn Gly Glu Lys Pro
```

```
                85                  90                  95
Thr Gln Glu Gln Tyr Asp Glu Phe Lys Thr Thr Val Thr Arg His Thr
            100                 105                 110
Met Ile His Glu Gln Ile Thr Arg Leu Phe His Ala Phe Arg Arg Asp
        115                 120                 125
Ser His Pro Met Ala Val Met Cys Gly Ile Thr Gly Ala Leu Ala Ala
    130                 135                 140
Phe Tyr His Asp Ser Leu Asp Val Asn Asn Pro Arg His Arg Glu Ile
145                 150                 155                 160
Ala Ala Phe Arg Leu Leu Ser Lys Met Pro Thr Met Ala Ala Met Cys
                165                 170                 175
Tyr Lys Tyr Ser Ile Gly Gln Pro Phe Val Tyr Pro Arg Asn Asp Leu
            180                 185                 190
Ser Tyr Ala Gly Asn Phe Leu Asn Met Met Phe Ser Thr Pro Cys Glu
        195                 200                 205
Pro Tyr Glu Val Asn Pro Ile Leu Glu Arg Ala Met Asp Arg Ile Leu
    210                 215                 220
Ile Leu His Ala Asp His Glu Gln Asn Ala Ser Thr Ser Thr Val Arg
225                 230                 235                 240
Thr Ala Gly Ser Ser Gly Ala Asn Pro Phe Ala Cys Ile Ala Ala Gly
                245                 250                 255
Ile Ala Ser Leu Trp Gly Pro Ala His Gly Gly Ala Asn Glu Ala Ala
            260                 265                 270
Leu Lys Met Leu Glu Glu Ile Ser Ser Val Lys His Ile Pro Glu Phe
        275                 280                 285
Val Arg Arg Ala Lys Asp Lys Asn Asp Ser Phe Arg Leu Met Gly Phe
    290                 295                 300
Gly His Arg Val Tyr Lys Asn Tyr Asp Pro Arg Ala Thr Val Met Arg
305                 310                 315                 320
Glu Thr Cys His Glu Val Leu Lys Glu Leu Gly Thr Lys Asp Asp Leu
                325                 330                 335
Leu Glu Val Ala Met Glu Leu Glu Asn Ile Ala Leu Asn Asp Pro Tyr
            340                 345                 350
Phe Ile Glu Lys Lys Leu Tyr Pro Asn Val Asp Phe Tyr Ser Gly Ile
        355                 360                 365
Ile Leu Lys Ala Met Gly Ile Pro Ser Ser Met Phe Thr Val Ile Phe
    370                 375                 380
Ala Met Ala Arg Thr Val Gly Trp Ile Ala His Trp Ser Glu Met His
385                 390                 395                 400
Ser Asp Gly Met Lys Ile Ala Arg Pro Arg Gln Leu Tyr Thr Gly Tyr
                405                 410                 415
Glu Lys Arg Asp Phe Lys Ser Asp Ile Lys Arg
            420                 425
```

<210> 325
<211> 477
<212> PRT
<213> E. Coli

<400> 325

```
Met Lys Val Thr Leu Pro Glu Phe Glu Arg Ala Gly Val Met Val Val
 1               5                  10                  15
Gly Asp Val Met Leu Asp Arg Tyr Trp Tyr Gly Pro Thr Ser Arg Ile
            20                  25                  30
Ser Pro Glu Ala Pro Val Pro Val Val Lys Val Asn Thr Ile Glu Glu
        35                  40                  45
```

```
Arg Pro Gly Gly Ala Ala Asn Val Ala Met Asn Ile Ala Ser Leu Gly
    50                  55                  60
Ala Asn Ala Arg Leu Val Gly Leu Thr Gly Ile Asp Asp Ala Ala Arg
65                  70                  75                  80
Ala Leu Ser Lys Ser Leu Ala Asp Val Asn Val Lys Cys Asp Phe Val
                85                  90                  95
Ser Val Pro Thr His Pro Thr Ile Thr Lys Leu Arg Val Leu Ser Arg
            100                 105                 110
Asn Gln Gln Leu Ile Arg Leu Asp Phe Glu Glu Gly Phe Glu Gly Val
        115                 120                 125
Asp Pro Gln Pro Leu His Glu Arg Ile Asn Gln Ala Leu Ser Ser Ile
    130                 135                 140
Gly Ala Leu Val Leu Ser Asp Tyr Ala Lys Gly Ala Leu Ala Ser Val
145                 150                 155                 160
Gln Gln Met Ile Gln Leu Ala Arg Lys Ala Gly Val Pro Val Leu Ile
                165                 170                 175
Asp Pro Lys Gly Thr Asp Phe Glu Arg Tyr Arg Gly Ala Thr Leu Leu
            180                 185                 190
Thr Pro Asn Leu Ser Glu Phe Glu Ala Val Val Gly Lys Cys Lys Thr
        195                 200                 205
Glu Glu Glu Ile Val Glu Arg Gly Met Lys Leu Ile Ala Asp Tyr Glu
    210                 215                 220
Leu Ser Ala Leu Leu Val Thr Arg Ser Glu Gln Gly Met Ser Leu Leu
225                 230                 235                 240
Gln Pro Gly Lys Ala Pro Leu His Met Pro Thr Gln Ala Gln Glu Val
                245                 250                 255
Tyr Asp Val Thr Gly Ala Gly Asp Thr Val Ile Gly Val Leu Ala Ala
            260                 265                 270
Thr Leu Ala Ala Gly Asn Ser Leu Glu Glu Ala Cys Phe Phe Ala Asn
        275                 280                 285
Ala Ala Ala Gly Val Val Val Gly Lys Leu Gly Thr Ser Thr Val Ser
    290                 295                 300
Pro Ile Glu Leu Glu Asn Ala Val Arg Gly Arg Ala Asp Thr Gly Phe
305                 310                 315                 320
Gly Val Met Thr Glu Glu Glu Leu Lys Leu Ala Val Ala Ala Ala Arg
                325                 330                 335
Lys Arg Gly Glu Lys Val Val Met Thr Asn Gly Val Phe Asp Ile Leu
            340                 345                 350
His Ala Gly His Val Ser Tyr Leu Ala Asn Ala Arg Lys Leu Gly Asp
        355                 360                 365
Arg Leu Ile Val Ala Val Asn Ser Asp Ala Ser Thr Lys Arg Leu Lys
    370                 375                 380
Gly Asp Ser Arg Pro Val Asn Pro Leu Glu Gln Arg Met Ile Val Leu
385                 390                 395                 400
Gly Ala Leu Glu Ala Val Asp Trp Val Val Ser Phe Glu Glu Asp Thr
                405                 410                 415
Pro Gln Arg Leu Ile Ala Gly Ile Leu Pro Asp Leu Leu Val Lys Gly
            420                 425                 430
Gly Asp Tyr Lys Pro Glu Glu Ile Ala Gly Ser Lys Glu Val Trp Ala
        435                 440                 445
Asn Gly Gly Glu Val Leu Val Leu Asn Phe Glu Asp Gly Cys Ser Thr
    450                 455                 460
Thr Asn Ile Ile Lys Lys Ile Gln Gln Asp Lys Lys Gly
465                 470                 475
```

<210> 326

<211> 946
<212> PRT
<213> E. Coli

<400> 326

```
Met Lys Pro Leu Ser Ser Pro Leu Gln Gln Tyr Trp Gln Thr Val Val
 1               5                  10                  15
Glu Arg Leu Pro Glu Pro Leu Ala Glu Glu Ser Leu Ser Ala Gln Ala
            20                  25                  30
Lys Ser Val Leu Thr Phe Ser Asp Phe Val Gln Asp Ser Val Ile Ala
        35                  40                  45
His Pro Glu Trp Leu Thr Glu Leu Glu Ser Gln Pro Pro Gln Ala Asp
    50                  55                  60
Glu Trp Gln His Tyr Ala Ala Trp Leu Gln Glu Ala Leu Cys Asn Val
65                  70                  75                  80
Ser Asp Glu Ala Gly Leu Met Arg Glu Leu Arg Leu Phe Arg Arg Arg
                85                  90                  95
Ile Met Val Arg Ile Ala Trp Ala Gln Thr Leu Ala Leu Val Thr Glu
            100                 105                 110
Glu Ser Ile Leu Gln Gln Leu Ser Tyr Leu Ala Glu Thr Leu Ile Val
        115                 120                 125
Ala Ala Arg Asp Trp Leu Tyr Asp Ala Cys Cys Arg Glu Trp Gly Thr
    130                 135                 140
Pro Cys Asn Ala Gln Gly Glu Ala Gln Pro Leu Leu Ile Leu Gly Met
145                 150                 155                 160
Gly Lys Leu Gly Gly Gly Glu Leu Asn Phe Ser Ser Asp Ile Asp Leu
                165                 170                 175
Ile Phe Ala Trp Pro Glu His Gly Cys Thr Gln Gly Gly Arg Arg Glu
            180                 185                 190
Leu Asp Asn Ala Gln Phe Phe Thr Arg Met Gly Gln Arg Leu Ile Lys
        195                 200                 205
Val Leu Asp Gln Pro Thr Gln Asp Gly Phe Val Tyr Arg Val Asp Met
    210                 215                 220
Arg Leu Arg Pro Phe Gly Glu Ser Gly Pro Leu Val Leu Ser Phe Ala
225                 230                 235                 240
Ala Leu Glu Asp Tyr Tyr Gln Glu Gln Gly Arg Asp Trp Glu Arg Tyr
                245                 250                 255
Ala Met Val Lys Ala Arg Ile Met Gly Asp Ser Glu Gly Val Tyr Ala
            260                 265                 270
Asn Glu Leu Arg Ala Met Leu Arg Pro Phe Val Phe Arg Arg Tyr Ile
        275                 280                 285
Asp Phe Ser Val Ile Gln Ser Leu Arg Asn Met Lys Gly Met Ile Ala
    290                 295                 300
Arg Glu Val Arg Arg Arg Gly Leu Thr Asp Asn Ile Lys Leu Gly Ala
305                 310                 315                 320
Gly Gly Ile Arg Glu Ile Glu Phe Ile Val Gln Val Phe Gln Leu Ile
                325                 330                 335
Arg Gly Gly Arg Glu Pro Ser Leu Gln Ser Arg Ser Leu Leu Pro Thr
            340                 345                 350
Leu Ser Ala Ile Ala Glu Leu His Leu Leu Ser Glu Asn Asp Ala Glu
        355                 360                 365
Gln Leu Arg Val Ala Tyr Leu Phe Leu Arg Arg Leu Glu Asn Leu Leu
    370                 375                 380
Gln Ser Ile Asn Asp Glu Gln Thr Gln Thr Leu Pro Ser Asp Glu Leu
385                 390                 395                 400
Asn Arg Ala Arg Leu Ala Trp Ala Met Asp Phe Ala Asp Trp Pro Gln
                405                 410                 415
```

Leu Thr Gly Ala Leu Thr Ala His Met Thr Asn Val Arg Arg Val Phe
420 425 430
Asn Glu Leu Ile Gly Asp Asp Glu Ser Glu Thr Gln Glu Glu Ser Leu
435 440 445
Ser Glu Gln Trp Arg Glu Leu Trp Gln Asp Ala Leu Gln Glu Asp Asp
450 455 460
Thr Thr Pro Val Leu Ala His Leu Ser Glu Asp Asp Arg Lys Gln Val
465 470 475 480
Leu Thr Leu Ile Ala Asp Phe Arg Lys Glu Leu Asp Lys Arg Thr Ile
485 490 495
Gly Pro Arg Gly Arg Gln Val Leu Asp His Leu Met Pro His Leu Leu
500 505 510
Ser Asp Val Cys Ala Arg Glu Asp Ala Ala Val Thr Leu Ser Arg Ile
515 520 525
Thr Ala Leu Leu Val Gly Ile Val Thr Arg Thr Thr Tyr Leu Glu Leu
530 535 540
Leu Ser Glu Phe Pro Ala Ala Leu Lys His Leu Ile Ser Leu Cys Ala
545 550 555 560
Ala Ser Pro Met Ile Ala Ser Gln Leu Ala Arg Tyr Pro Leu Leu Leu
565 570 575
Asp Glu Leu Leu Asp Pro Asn Thr Leu Tyr Gln Pro Thr Ala Thr Asp
580 585 590
Ala Tyr Arg Asp Glu Leu Arg Gln Tyr Leu Leu Arg Val Pro Glu Asp
595 600 605
Asp Glu Glu Gln Gln Leu Glu Ala Leu Arg Gln Phe Lys Gln Ala Gln
610 615 620
Leu Leu Arg Ile Ala Ala Ala Asp Ile Ala Gly Thr Leu Pro Val Met
625 630 635 640
Lys Val Ser Asp His Leu Thr Trp Leu Ala Glu Ala Met Ile Asp Ala
645 650 655
Val Val Gln Gln Ala Trp Val Gln Met Val Ala Arg Tyr Gly Lys Pro
660 665 670
Asn His Leu Asn Glu Arg Glu Gly Arg Gly Phe Ala Val Val Gly Tyr
675 680 685
Gly Lys Leu Gly Gly Trp Glu Leu Gly Tyr Ser Ser Asp Leu Asp Leu
690 695 700
Ile Phe Leu His Asp Cys Pro Met Asp Ala Met Thr Asp Gly Glu Arg
705 710 715 720
Glu Ile Asp Gly Arg Gln Phe Tyr Leu Arg Leu Ala Gln Arg Ile Met
725 730 735
His Leu Phe Ser Thr Arg Thr Ser Ser Gly Ile Leu Tyr Glu Val Asp
740 745 750
Ala Arg Leu Arg Pro Ser Gly Ala Ala Gly Met Leu Val Thr Ser Ala
755 760 765
Glu Ala Phe Ala Asp Tyr Gln Lys Asn Glu Ala Trp Thr Trp Glu His
770 775 780
Gln Ala Leu Val Arg Ala Arg Val Val Tyr Gly Asp Pro Gln Leu Thr
785 790 795 800
Ala His Phe Asp Ala Val Arg Arg Glu Ile Met Thr Leu Pro Arg Glu
805 810 815
Gly Lys Thr Leu Gln Thr Glu Val Arg Glu Met Arg Glu Lys Met Arg
820 825 830
Ala His Leu Gly Asn Lys His Arg Asp Arg Phe Asp Ile Lys Ala Asp
835 840 845
Glu Gly Gly Ile Thr Asp Ile Glu Phe Ile Thr Gln Tyr Leu Val Leu
850 855 860
Arg Tyr Ala His Glu Lys Pro Lys Leu Thr Arg Trp Ser Asp Asn Val

865 870 875 880
Arg Ile Leu Glu Leu Leu Ala Gln Asn Asp Ile Met Glu Glu Gln Glu
885 890 895
Ala Met Ala Leu Thr Arg Ala Tyr Thr Thr Leu Arg Asp Glu Leu His
900 905 910
His Leu Ala Leu Gln Glu Leu Pro Gly His Val Ser Glu Asp Cys Phe
915 920 925
Thr Ala Glu Arg Glu Leu Val Arg Ala Ser Trp Gln Lys Trp Leu Val
930 935 940
Glu Glu
945

<210> 327
<211> 433
<212> PRT
<213> E. Coli

<400> 327
Met Ala Gln Glu Ile Glu Leu Lys Phe Ile Val Asn His Ser Ala Val
1 5 10 15
Glu Ala Leu Arg Asp His Leu Asn Thr Leu Gly Gly Glu His His Asp
20 25 30
Pro Val Gln Leu Leu Asn Ile Tyr Tyr Glu Thr Pro Asp Asn Trp Leu
35 40 45
Arg Gly His Asp Met Gly Leu Arg Ile Arg Gly Glu Asn Gly Arg Tyr
50 55 60
Glu Met Thr Met Lys Val Ala Gly Arg Val Thr Gly Gly Leu His Gln
65 70 75 80
Arg Pro Glu Tyr Asn Val Ala Leu Ser Glu Pro Thr Leu Asp Leu Ala
85 90 95
Gln Leu Pro Thr Glu Val Trp Pro Asn Gly Glu Leu Pro Ala Asp Leu
100 105 110
Ala Ser Arg Val Gln Pro Leu Phe Ser Thr Asp Phe Tyr Arg Glu Lys
115 120 125
Trp Leu Val Ala Val Asp Gly Ser Gln Ile Glu Ile Ala Leu Asp Gln
130 135 140
Gly Glu Val Lys Ala Gly Glu Phe Ala Glu Pro Ile Cys Glu Leu Glu
145 150 155 160
Leu Glu Leu Leu Ser Gly Asp Thr Arg Ala Val Leu Lys Leu Ala Asn
165 170 175
Gln Leu Val Ser Gln Thr Gly Leu Arg Gln Gly Ser Leu Ser Lys Ala
180 185 190
Ala Arg Gly Tyr His Leu Ala Gln Gly Asn Pro Ala Arg Glu Ile Lys
195 200 205
Pro Thr Thr Ile Leu His Val Ala Ala Lys Ala Asp Val Glu Gln Gly
210 215 220
Leu Glu Ala Ala Leu Glu Leu Ala Leu Ala Gln Trp Gln Tyr His Glu
225 230 235 240
Glu Leu Trp Val Arg Gly Asn Asp Ala Ala Lys Glu Gln Val Leu Ala
245 250 255
Ala Ile Ser Leu Val Arg His Thr Leu Met Leu Phe Gly Gly Ile Val
260 265 270
Pro Arg Lys Ala Ser Thr His Leu Arg Asp Leu Leu Thr Gln Cys Glu
275 280 285
Ala Thr Ile Ala Ser Ala Val Ser Ala Val Thr Ala Val Tyr Ser Thr

290 295 300
Glu Thr Ala Met Ala Lys Leu Ala Leu Thr Glu Trp Leu Val Ser Lys
305 310 315 320
Ala Trp Gln Pro Phe Leu Asp Ala Lys Ala Gln Gly Lys Ile Ser Asp
325 330 335
Ser Phe Lys Arg Phe Ala Asp Ile His Leu Ser Arg His Ala Ala Glu
340 345 350
Leu Lys Ser Val Phe Cys Gln Pro Leu Gly Asp Arg Tyr Arg Asp Gln
355 360 365
Leu Pro Arg Leu Thr Arg Asp Ile Asp Ser Ile Leu Leu Leu Ala Gly
370 375 380
Tyr Tyr Asp Pro Val Val Ala Gln Ala Trp Leu Glu Asn Trp Gln Gly
385 390 395 400
Leu His His Ala Ile Ala Thr Gly Gln Arg Ile Glu Ile Glu His Phe
405 410 415
Arg Asn Glu Ala Asn Asn Gln Glu Pro Phe Trp Leu His Ser Gly Lys
420 425 430
Arg

<210> 328
<211> 70
<212> PRT
<213> E. Coli

<400> 328
Met Ser Gly Lys Met Thr Gly Ile Val Lys Trp Phe Asn Ala Asp Lys
1 5 10 15
Gly Phe Gly Phe Ile Thr Pro Asp Asp Gly Ser Lys Asp Val Phe Val
20 25 30
His Phe Ser Ala Ile Gln Asn Asp Gly Tyr Lys Ser Leu Asp Glu Gly
35 40 45
Gln Lys Val Ser Phe Thr Ile Glu Ser Gly Ala Lys Gly Pro Ala Ala
50 55 60
Gly Asn Val Thr Ser Leu
65 70

<210> 329
<211> 523
<212> PRT
<213> E. Coli

<400> 329
Met Arg Asp Ile Val Asp Pro Val Phe Ser Ile Gly Ile Ser Ser Leu
1 5 10 15
Trp Asp Glu Leu Arg His Met Pro Ala Gly Gly Val Trp Trp Phe Asn
20 25 30
Val Asp Arg His Glu Asp Ala Ile Ser Leu Ala Asn Gln Thr Ile Ala
35 40 45
Ser Gln Ala Glu Thr Ala His Val Ala Val Ile Ser Met Asp Ser Asp
50 55 60
Pro Ala Lys Ile Phe Gln Leu Asp Asp Ser Gln Gly Pro Glu Lys Ile
65 70 75 80

```
Lys Leu Phe Ser Met Leu Asn His Glu Lys Gly Leu Tyr Tyr Leu Thr
                85                  90                  95
Arg Asp Leu Gln Cys Ser Ile Asp Pro His Asn Tyr Leu Phe Ile Leu
            100                 105                 110
Val Cys Ala Asn Asn Ala Trp Gln Asn Ile Pro Ala Glu Arg Leu Arg
        115                 120                 125
Ser Trp Leu Asp Lys Met Asn Lys Trp Ser Arg Leu Asn His Cys Ser
    130                 135                 140
Leu Leu Val Ile Asn Pro Gly Asn Asn Asn Asp Lys Gln Phe Ser Leu
145                 150                 155                 160
Leu Leu Glu Glu Tyr Arg Ser Leu Phe Gly Leu Ala Ser Leu Arg Phe
                165                 170                 175
Gln Gly Asp Gln His Leu Leu Asp Ile Ala Phe Trp Cys Asn Glu Lys
            180                 185                 190
Gly Val Ser Ala Arg Gln Gln Leu Ser Val Gln Gln Gln Asn Gly Ile
        195                 200                 205
Trp Thr Leu Val Gln Ser Glu Glu Ala Glu Ile Gln Pro Arg Ser Asp
    210                 215                 220
Glu Lys Arg Ile Leu Ser Asn Val Ala Val Leu Glu Gly Ala Pro Pro
225                 230                 235                 240
Leu Ser Glu His Trp Gln Leu Phe Asn Asn Asn Glu Val Leu Phe Asn
                245                 250                 255
Glu Ala Arg Thr Ala Gln Ala Ala Thr Val Val Phe Ser Leu Gln Gln
            260                 265                 270
Asn Ala Gln Ile Glu Pro Leu Ala Arg Ser Ile His Thr Leu Arg Arg
        275                 280                 285
Gln Arg Gly Ser Ala Met Lys Ile Leu Val Arg Glu Asn Thr Ala Ser
    290                 295                 300
Leu Arg Ala Thr Asp Glu Arg Leu Leu Leu Ala Cys Gly Ala Asn Met
305                 310                 315                 320
Val Ile Pro Trp Asn Ala Pro Leu Ser Arg Cys Leu Thr Met Ile Glu
                325                 330                 335
Ser Val Gln Gly Gln Lys Phe Ser Arg Tyr Val Pro Glu Asp Ile Thr
            340                 345                 350
Thr Leu Leu Ser Met Thr Gln Pro Leu Lys Leu Arg Gly Phe Gln Lys
        355                 360                 365
Trp Asp Val Phe Cys Asn Ala Val Asn Asn Met Met Asn Asn Pro Leu
    370                 375                 380
Leu Pro Ala His Gly Lys Gly Val Leu Val Ala Leu Arg Pro Val Pro
385                 390                 395                 400
Gly Ile Arg Val Glu Gln Ala Leu Thr Leu Cys Arg Pro Asn Arg Thr
                405                 410                 415
Gly Asp Ile Met Thr Ile Gly Gly Asn Arg Leu Val Leu Phe Leu Ser
            420                 425                 430
Phe Cys Arg Ile Asn Asp Leu Asp Thr Ala Leu Asn His Ile Phe Pro
        435                 440                 445
Leu Pro Thr Gly Asp Ile Phe Ser Asn Arg Met Val Trp Phe Glu Asp
    450                 455                 460
Asp Gln Ile Ser Ala Glu Leu Val Gln Met Arg Leu Leu Ala Pro Glu
465                 470                 475                 480
Gln Trp Gly Met Pro Leu Pro Leu Thr Gln Ser Ser Lys Pro Val Ile
                485                 490                 495
Asn Ala Glu His Asp Gly Arg His Trp Arg Arg Ile Pro Glu Pro Met
            500                 505                 510
Arg Leu Leu Asp Asp Ala Val Glu Arg Ser Ser
        515                 520
```

<210> 330
<211> 62
<212> PRT
<213> E. Coli

<400> 330
Met Thr Ile Ser Asp Ile Ile Glu Ile Ile Val Val Cys Ala Leu Ile
1 5 10 15
Phe Phe Pro Leu Gly Tyr Leu Ala Arg His Ser Leu Arg Arg Ile Arg
20 25 30
Asp Thr Leu Arg Leu Phe Phe Ala Lys Pro Arg Tyr Val Lys Pro Ala
35 40 45
Gly Thr Leu Arg Arg Thr Glu Lys Ala Arg Ala Thr Lys Lys
50 55 60

<210> 331
<211> 559
<212> PRT
<213> E. Coli

<400> 331
Met Thr Gln Phe Thr Gln Asn Thr Ala Met Pro Ser Ser Leu Trp Gln
1 5 10 15
Tyr Trp Arg Gly Leu Ser Gly Trp Asn Phe Tyr Phe Leu Val Lys Phe
20 25 30
Gly Leu Leu Trp Ala Gly Tyr Leu Asn Phe His Pro Leu Leu Asn Leu
35 40 45
Val Phe Ala Ala Phe Leu Leu Met Pro Leu Pro Arg Tyr Ser Leu His
50 55 60
Arg Leu Arg His Trp Ile Ala Leu Pro Ile Gly Phe Ala Leu Phe Trp
65 70 75 80
His Asp Thr Trp Leu Pro Gly Pro Glu Ser Ile Met Ser Gln Gly Ser
85 90 95
Gln Val Ala Gly Phe Ser Thr Asp Tyr Leu Ile Asp Leu Val Thr Arg
100 105 110
Phe Ile Asn Trp Gln Met Ile Gly Ala Ile Phe Val Leu Leu Val Ala
115 120 125
Trp Leu Phe Leu Ser Gln Trp Ile Arg Ile Thr Val Phe Val Val Ala
130 135 140
Ile Leu Leu Trp Leu Asn Val Leu Thr Leu Ala Gly Pro Ser Phe Ser
145 150 155 160
Leu Trp Pro Ala Gly Gln Pro Thr Thr Thr Val Thr Thr Thr Gly Gly
165 170 175
Asn Ala Ala Ala Thr Val Ala Ala Thr Gly Gly Ala Pro Val Val Gly
180 185 190
Asp Met Pro Ala Gln Thr Ala Pro Pro Thr Thr Ala Asn Leu Asn Ala
195 200 205
Trp Leu Asn Asn Phe Tyr Asn Ala Glu Ala Lys Arg Lys Ser Thr Phe
210 215 220
Pro Ser Ser Leu Pro Ala Asp Ala Gln Pro Phe Glu Leu Leu Val Ile
225 230 235 240
Asn Ile Cys Ser Leu Ser Trp Ser Asp Ile Glu Ala Ala Gly Leu Met
245 250 255
Ser His Pro Leu Trp Ser His Phe Asp Ile Glu Phe Lys Asn Phe Asn
260 265 270

Ser Ala Thr Ser Tyr Ser Gly Pro Ala Ala Ile Arg Leu Leu Arg Ala
275 280 285
Ser Cys Gly Gln Thr Ser His Thr Asn Leu Tyr Gln Pro Ala Asn Asn
290 295 300
Asp Cys Tyr Leu Phe Asp Asn Leu Ser Lys Leu Gly Phe Thr Gln His
305 310 315 320
Leu Met Met Gly His Asn Gly Gln Phe Gly Gly Phe Leu Lys Glu Val
325 330 335
Arg Glu Asn Gly Gly Met Gln Ser Glu Leu Met Asp Gln Thr Asn Leu
340 345 350
Pro Val Ile Leu Leu Gly Phe Asp Gly Ser Pro Val Tyr Asp Asp Thr
355 360 365
Ala Val Leu Asn Arg Trp Leu Asp Val Thr Glu Lys Asp Lys Asn Ser
370 375 380
Arg Ser Ala Thr Phe Tyr Asn Thr Leu Pro Leu His Asp Gly Asn His
385 390 395 400
Tyr Pro Gly Val Ser Lys Thr Ala Asp Tyr Lys Ala Arg Ala Gln Lys
405 410 415
Phe Phe Asp Glu Leu Asp Ala Phe Phe Thr Glu Leu Glu Lys Ser Gly
420 425 430
Arg Lys Val Met Val Val Val Val Pro Glu His Gly Gly Ala Leu Lys
435 440 445
Gly Asp Arg Met Gln Val Ser Gly Leu Arg Asp Ile Pro Ser Pro Ser
450 455 460
Ile Thr Asp Val Pro Val Gly Val Lys Phe Phe Gly Met Lys Ala Pro
465 470 475 480
His Gln Gly Ala Pro Ile Val Ile Glu Gln Pro Ser Ser Phe Leu Ala
485 490 495
Ile Ser Asp Leu Val Val Arg Val Leu Asp Gly Lys Ile Phe Thr Glu
500 505 510
Asp Asn Val Asp Trp Lys Lys Leu Thr Ser Gly Leu Pro Gln Thr Ala
515 520 525
Pro Val Ser Glu Asn Ser Asn Ala Val Val Ile Gln Tyr Gln Asp Lys
530 535 540
Pro Tyr Val Arg Leu Asn Gly Gly Asp Trp Val Pro Tyr Pro Gln
545 550 555

<210> 332
<211> 127
<212> PRT
<213> E. Coli

<400> 332
Met Glu Gly Ser Arg Met Lys Tyr Arg Ile Ala Leu Ala Val Ser Leu
1 5 10 15
Phe Ala Leu Ser Ala Gly Ser Tyr Ala Thr Thr Leu Cys Gln Glu Lys
20 25 30
Glu Gln Asn Ile Leu Lys Glu Ile Ser Tyr Ala Glu Lys His Gln Asn
35 40 45
Gln Asn Arg Ile Asp Gly Leu Asn Lys Ala Leu Ser Glu Val Arg Ala
50 55 60
Asn Cys Ser Asp Ser Gln Leu Arg Ala Asp His Gln Lys Lys Ile Ala
65 70 75 80
Lys Gln Lys Asp Glu Val Ala Glu Arg Gln Gln Asp Leu Ala Glu Ala
85 90 95
Lys Gln Lys Gly Asp Ala Asp Lys Ile Ala Lys Arg Glu Arg Lys Leu

```
            100                 105                 110
Ala Glu Ala Gln Glu Glu Leu Lys Lys Leu Glu Ala Arg Asp Tyr
        115                 120                 125


      <210> 333
      <211> 101
      <212> PRT
      <213> E. Coli

      <400> 333
Met Ser Lys Glu His Thr Thr Glu His Leu Arg Ala Glu Leu Lys Ser
 1               5                  10                  15
Leu Ser Asp Thr Leu Glu Glu Val Leu Ser Ser Ser Gly Glu Lys Ser
            20                  25                  30
Lys Glu Glu Leu Ser Lys Ile Arg Ser Lys Ala Glu Gln Ala Leu Lys
        35                  40                  45
Gln Ser Arg Tyr Arg Leu Gly Glu Thr Gly Asp Ala Ile Ala Lys Gln
    50                  55                  60
Thr Arg Val Ala Ala Ala Arg Ala Asp Glu Tyr Val Arg Glu Asn Pro
65                  70                  75                  80
Trp Thr Gly Val Gly Ile Gly Ala Ala Ile Gly Val Val Leu Gly Val
                85                  90                  95
Leu Leu Ser Arg Arg
            100


      <210> 334
      <211> 134
      <212> PRT
      <213> E. Coli

      <400> 334
Met Ala Asp Thr His His Ala Gln Gly Pro Gly Lys Ser Val Leu Gly
 1               5                  10                  15
Ile Gly Gln Arg Ile Val Ser Ile Met Val Glu Met Val Glu Thr Arg
            20                  25                  30
Leu Arg Leu Ala Val Val Glu Leu Glu Glu Glu Lys Ala Asn Leu Phe
        35                  40                  45
Gln Leu Leu Leu Met Leu Gly Leu Thr Met Leu Phe Ala Ala Phe Gly
    50                  55                  60
Leu Met Ser Leu Met Val Leu Ile Ile Trp Ala Val Asp Pro Gln Tyr
65                  70                  75                  80
Arg Leu Asn Ala Met Ile Ala Thr Thr Val Val Leu Leu Leu Leu Ala
                85                  90                  95
Leu Ile Gly Gly Ile Trp Thr Leu Arg Lys Ser Arg Lys Ser Thr Leu
            100                 105                 110
Leu Arg His Thr Arg His Glu Leu Ala Asn Asp Arg Gln Leu Leu Glu
        115                 120                 125
Glu Glu Ser Arg Glu Gln
    130


      <210> 335
      <211> 99
      <212> PRT
```

<213> E. Coli

<400> 335

```
Met Ser Ser Lys Val Glu Arg Glu Arg Arg Lys Ala Gln Leu Leu Ser
 1               5                  10                  15
Gln Ile Gln Gln Gln Arg Leu Asp Leu Ser Ala Ser Arg Arg Glu Trp
            20                  25                  30
Leu Glu Thr Thr Gly Ala Tyr Asp Arg Arg Trp Asn Met Leu Leu Ser
        35                  40                  45
Leu Arg Ser Trp Ala Leu Val Gly Ser Ser Val Met Ala Ile Trp Thr
    50                  55                  60
Ile Arg His Pro Asn Met Leu Val Arg Trp Ala Arg Arg Gly Phe Gly
65                  70                  75                  80
Val Trp Ser Ala Trp Arg Leu Val Lys Thr Thr Leu Lys Gln Gln Gln
                85                  90                  95
Leu Arg Gly
```

<210> 336
<211> 160
<212> PRT
<213> E. Coli

<400> 336

```
Met Ile Leu Ser Ile Asp Ser Asn Asp Ala Asn Thr Ala Pro Leu His
 1               5                  10                  15
Lys Lys Thr Ile Ser Ser Leu Ser Gly Ala Val Glu Ser Met Met Lys
            20                  25                  30
Lys Leu Glu Asp Val Gly Val Leu Val Ala Arg Ile Leu Met Pro Ile
        35                  40                  45
Leu Phe Ile Thr Ala Gly Trp Gly Lys Ile Thr Gly Tyr Ala Gly Thr
    50                  55                  60
Gln Gln Tyr Met Glu Ala Met Gly Val Pro Gly Phe Met Leu Pro Leu
65                  70                  75                  80
Val Ile Leu Leu Glu Phe Gly Gly Gly Leu Ala Ile Leu Phe Gly Phe
                85                  90                  95
Leu Thr Arg Thr Thr Ala Leu Phe Thr Ala Gly Phe Thr Leu Leu Thr
            100                 105                 110
Ala Phe Leu Phe His Ser Asn Phe Ala Glu Gly Val Asn Ser Leu Met
        115                 120                 125
Phe Met Lys Asn Leu Thr Ile Ser Gly Gly Phe Leu Leu Leu Ala Ile
    130                 135                 140
Thr Gly Pro Gly Ala Tyr Ser Ile Asp Arg Leu Leu Asn Lys Lys Trp
145                 150                 155                 160
```

<210> 337
<211> 296
<212> PRT
<213> E. Coli

<400> 337

```
Met Ile Lys Lys Thr Thr Glu Ile Asp Ala Ile Leu Leu Asn Leu Asn
 1               5                  10                  15
```

```
Lys Ala Ile Asp Ala His Tyr Gln Trp Leu Val Ser Met Phe His Ser
            20                  25                  30
Val Val Ala Arg Asp Ala Ser Lys Pro Glu Ile Thr Asp Asn His Ser
        35                  40                  45
Tyr Gly Leu Cys Gln Phe Gly Arg Trp Ile Asp His Leu Gly Pro Leu
    50                  55                  60
Asp Asn Asp Glu Leu Pro Tyr Val Arg Leu Met Asp Ser Ala His Gln
65                  70                  75                  80
His Met His Asn Cys Gly Arg Glu Leu Met Leu Ala Ile Val Glu Asn
                85                  90                  95
His Trp Gln Asp Ala His Phe Asp Ala Phe Gln Glu Gly Leu Leu Ser
            100                 105                 110
Phe Thr Ala Ala Leu Thr Asp Tyr Lys Ile Tyr Leu Leu Thr Ile Arg
        115                 120                 125
Ser Asn Met Asp Val Leu Thr Gly Leu Pro Gly Arg Arg Val Leu Asp
    130                 135                 140
Glu Ser Phe Asp His Gln Leu Arg Asn Ala Glu Pro Leu Asn Leu Tyr
145                 150                 155                 160
Leu Met Leu Leu Asp Ile Asp Arg Phe Lys Leu Val Asn Asp Thr Tyr
                165                 170                 175
Gly His Leu Ile Gly Asp Val Val Leu Arg Thr Leu Ala Thr Tyr Leu
            180                 185                 190
Ala Ser Trp Thr Arg Asp Tyr Glu Thr Val Tyr Arg Tyr Gly Gly Glu
        195                 200                 205
Glu Phe Ile Ile Ile Val Lys Ala Ala Asn Asp Glu Glu Ala Cys Arg
    210                 215                 220
Ala Gly Val Arg Ile Cys Gln Leu Val Asp Asn His Ala Ile Thr His
225                 230                 235                 240
Ser Glu Gly His Ile Asn Ile Thr Val Thr Ala Gly Val Ser Arg Ala
                245                 250                 255
Phe Pro Glu Glu Pro Leu Asp Val Val Ile Gly Arg Ala Asp Arg Ala
            260                 265                 270
Met Tyr Glu Gly Lys Gln Thr Gly Arg Asn Arg Cys Met Phe Ile Asp
        275                 280                 285
Glu Gln Asn Val Ile Asn Arg Val
    290                 295
```

<210> 338
<211> 203
<212> PRT
<213> E. Coli

<400> 338

```
Met Arg Leu Arg Val Val Pro Gly Phe Ile Ser Pro Pro Pro Gly Phe
 1               5                  10                  15
Gly Gly Leu Gly Tyr Thr Pro Thr Ala Arg Ala Cys Val Asn Ile Ser
            20                  25                  30
Ile Pro Leu Gln Leu Arg Val Ile Asp Met Leu Asp Val Phe Thr Pro
        35                  40                  45
Leu Leu Lys Leu Phe Ala Asn Glu Pro Leu Glu Arg Leu Met Tyr Thr
    50                  55                  60
Ile Ile Ile Phe Gly Leu Thr Leu Trp Leu Ile Pro Lys Glu Phe Thr
65                  70                  75                  80
Val Ala Phe Asn Ala Tyr Thr Glu Ile Pro Trp Leu Phe Gln Ile Ile
                85                  90                  95
```

```
Val Phe Ala Phe Ser Phe Val Val Ala Ile Ser Phe Ser Arg Leu Arg
            100                 105                 110
Ala His Ile Gln Lys His Tyr Ser Leu Leu Pro Glu Gln Arg Val Leu
        115                 120                 125
Leu Arg Leu Ser Glu Lys Glu Ile Ala Val Phe Lys Asp Phe Leu Lys
    130                 135                 140
Thr Gly Asn Leu Ile Ile Thr Ser Pro Cys Arg Asn Pro Val Met Lys
145                 150                 155                 160
Lys Leu Glu Arg Lys Gly Ile Ile Gln His Gln Ser Asp Ser Ala Asn
                165                 170                 175
Cys Ser Tyr Tyr Leu Val Thr Glu Lys Tyr Ser His Phe Met Lys Leu
            180                 185                 190
Phe Trp Asn Ser Arg Ser Arg Arg Phe Asn Arg
        195                 200
```

<210> 339
<211> 58
<212> PRT
<213> E. Coli

<400> 339

```
Met Leu Leu Gln Pro Ser Ala Arg Thr Ser Phe Gly Phe Lys Cys Phe
 1               5                  10                  15
Ala Phe Gly Ile Arg His Gly Ser Glu Arg Ser Ile Leu Val Gly Glu
            20                  25                  30
His Ala Ala His Gln Gly Phe Val Val Ala Glu Val Asp Phe Leu His
        35                  40                  45
Phe Ala Asn Leu Thr Ser Cys Cys Tyr Val
    50                  55
```

<210> 340
<211> 1426
<212> PRT
<213> E. Coli

<400> 340

```
Met Ser Gly Lys Pro Ala Ala Arg Gln Gly Asp Met Thr Gln Tyr Gly
 1               5                  10                  15
Gly Pro Ile Val Gln Gly Ser Ala Gly Val Arg Ile Gly Ala Pro Thr
            20                  25                  30
Gly Val Ala Cys Ser Val Cys Pro Gly Gly Met Thr Ser Gly Asn Pro
        35                  40                  45
Val Asn Pro Leu Leu Gly Ala Lys Val Leu Pro Gly Glu Thr Asp Leu
    50                  55                  60
Ala Leu Pro Gly Pro Leu Pro Phe Ile Leu Ser Arg Thr Tyr Ser Ser
65                  70                  75                  80
Tyr Arg Thr Lys Thr Pro Ala Pro Val Gly Val Phe Gly Pro Gly Trp
                85                  90                  95
Lys Ala Pro Ser Asp Ile Arg Leu Gln Leu Arg Asp Asp Gly Leu Ile
            100                 105                 110
Leu Asn Asp Asn Gly Gly Arg Ser Ile His Phe Glu Pro Leu Leu Pro
        115                 120                 125
Gly Glu Ala Val Tyr Ser Arg Ser Glu Ser Met Trp Leu Val Arg Gly
    130                 135                 140
```

Gly Lys Ala Ala Gln Pro Asp Gly His Thr Leu Ala Arg Leu Trp Gly
145 150 155 160
Ala Leu Pro Pro Asp Ile Arg Leu Ser Pro His Leu Tyr Leu Ala Thr
165 170 175
Asn Ser Ala Gln Gly Pro Trp Trp Ile Leu Gly Trp Ser Glu Arg Val
180 185 190
Pro Gly Ala Glu Asp Val Leu Pro Ala Pro Leu Pro Pro Tyr Arg Val
195 200 205
Leu Thr Gly Met Ala Asp Arg Phe Gly Arg Thr Leu Thr Tyr Arg Arg
210 215 220
Glu Ala Ala Gly Asp Leu Ala Gly Glu Ile Thr Gly Val Thr Asp Gly
225 230 235 240
Ala Gly Arg Glu Phe Arg Leu Val Leu Thr Thr Gln Ala Gln Arg Ala
245 250 255
Glu Glu Ala Arg Thr Ser Ser Leu Ser Ser Ser Asp Ser Ser Arg Pro
260 265 270
Leu Ser Ala Ser Ala Phe Pro Asp Thr Leu Pro Gly Thr Glu Tyr Gly
275 280 285
Pro Asp Arg Gly Ile Arg Leu Ser Ala Val Trp Leu Met His Asp Pro
290 295 300
Ala Tyr Pro Glu Ser Leu Pro Ala Ala Pro Leu Val Arg Tyr Thr Tyr
305 310 315 320
Thr Glu Ala Gly Glu Leu Leu Ala Val Tyr Asp Arg Ser Asn Thr Gln
325 330 335
Val Arg Ala Phe Thr Tyr Asp Ala Gln His Pro Gly Arg Met Val Ala
340 345 350
His Arg Tyr Ala Gly Arg Pro Glu Met Arg Tyr Arg Tyr Asp Asp Thr
355 360 365
Gly Arg Val Val Glu Gln Leu Asn Pro Ala Gly Leu Ser Tyr Arg Tyr
370 375 380
Leu Tyr Glu Gln Asp Arg Ile Thr Val Thr Asp Ser Leu Asn Arg Arg
385 390 395 400
Glu Val Leu His Thr Glu Gly Gly Ala Gly Leu Lys Arg Val Val Lys
405 410 415
Lys Glu Leu Ala Asp Gly Ser Val Thr Arg Ser Gly Tyr Asp Ala Ala
420 425 430
Gly Arg Leu Thr Ala Gln Thr Asp Ala Ala Gly Arg Arg Thr Glu Tyr
435 440 445
Gly Leu Asn Val Val Ser Gly Asp Ile Thr Asp Ile Thr Thr Pro Asp
450 455 460
Gly Arg Glu Thr Lys Phe Tyr Tyr Asn Asp Gly Asn Gln Leu Thr Ala
465 470 475 480
Val Val Ser Pro Asp Gly Leu Glu Ser Arg Arg Glu Tyr Asp Glu Pro
485 490 495
Gly Arg Leu Val Ser Glu Thr Ser Arg Ser Gly Glu Thr Val Arg Tyr
500 505 510
Arg Tyr Asp Asp Ala His Ser Glu Leu Pro Ala Thr Thr Thr Asp Ala
515 520 525
Thr Gly Ser Thr Arg Gln Met Thr Trp Ser Arg Tyr Gly Gln Leu Leu
530 535 540
Ala Phe Thr Asp Cys Ser Gly Tyr Gln Thr Arg Tyr Glu Tyr Asp Arg
545 550 555 560
Phe Gly Gln Met Thr Ala Val His Arg Glu Glu Gly Ile Ser Leu Tyr
565 570 575
Arg Arg Tyr Asp Asn Arg Gly Arg Leu Thr Ser Val Lys Asp Ala Gln
580 585 590
Gly Arg Glu Thr Arg Tyr Glu Tyr Asn Ala Ala Gly Asp Leu Thr Ala

595 600 605
Val Ile Thr Pro Asp Gly Asn Arg Ser Glu Thr Gln Tyr Asp Ala Trp
610 615 620
Gly Lys Ala Val Ser Thr Thr Gln Gly Gly Leu Thr Arg Ser Met Glu
625 630 635 640
Tyr Asp Ala Ala Gly Arg Val Ile Ser Leu Thr Asn Glu Asn Gly Ser
645 650 655
His Ser Val Phe Ser Tyr Asp Ala Leu Asp Arg Leu Val Gln Gln Gly
660 665 670
Gly Phe Asp Gly Arg Thr Gln Arg Tyr His Tyr Asp Leu Thr Gly Lys
675 680 685
Leu Thr Gln Ser Glu Asp Glu Gly Leu Val Ile Leu Trp Tyr Tyr Asp
690 695 700
Glu Ser Asp Arg Ile Thr His Arg Thr Val Asn Gly Glu Pro Ala Glu
705 710 715 720
Gln Trp Gln Tyr Asp Gly His Gly Trp Leu Thr Asp Ile Ser His Leu
725 730 735
Ser Glu Gly His Arg Val Ala Val His Tyr Gly Tyr Asp Asp Lys Gly
740 745 750
Arg Leu Thr Gly Glu Cys Gln Thr Val Glu Asn Pro Glu Thr Gly Glu
755 760 765
Leu Leu Trp Gln His Glu Thr Lys His Ala Tyr Asn Glu Gln Gly Leu
770 775 780
Ala Asn Arg Val Thr Pro Asp Ser Leu Pro Pro Val Glu Trp Leu Thr
785 790 795 800
Tyr Gly Ser Gly Tyr Leu Ala Gly Met Lys Leu Gly Gly Thr Pro Leu
805 810 815
Val Glu Tyr Thr Arg Asp Arg Leu His Arg Glu Thr Val Arg Ser Phe
820 825 830
Gly Ser Met Ala Gly Ser Asn Ala Ala Tyr Glu Leu Thr Ser Thr Tyr
835 840 845
Thr Pro Ala Gly Gln Leu Gln Ser Gln His Leu Asn Ser Leu Val Tyr
850 855 860
Asp Arg Asp Tyr Gly Trp Ser Asp Asn Gly Asp Leu Val Arg Ile Ser
865 870 875 880
Gly Pro Arg Gln Thr Arg Glu Tyr Gly Tyr Ser Ala Thr Gly Arg Leu
885 890 895
Glu Ser Val Arg Thr Leu Ala Pro Asp Leu Asp Ile Arg Ile Pro Tyr
900 905 910
Ala Thr Asp Pro Ala Gly Asn Arg Leu Pro Asp Pro Glu Leu His Pro
915 920 925
Asp Ser Thr Leu Thr Val Trp Pro Asp Asn Arg Ile Ala Glu Asp Ala
930 935 940
His Tyr Val Tyr Arg His Asp Glu Tyr Gly Arg Leu Thr Glu Lys Thr
945 950 955 960
Asp Arg Ile Pro Ala Gly Val Ile Arg Thr Asp Asp Glu Arg Thr His
965 970 975
His Tyr His Tyr Asp Ser Gln His Arg Leu Val Phe Tyr Thr Arg Ile
980 985 990
Gln His Gly Glu Pro Leu Val Glu Ser Arg Tyr Leu Tyr Asp Pro Leu
995 1000 1005
Gly Arg Arg Met Ala Lys Arg Val Trp Arg Arg Glu Arg Asp Leu Thr
1010 1015 1020
Gly Trp Met Ser Leu Ser Arg Lys Pro Glu Val Thr Trp Tyr Gly Trp
1025 1030 1035 1040
Asp Gly Asp Arg Leu Thr Thr Val Gln Thr Asp Thr Thr Arg Ile Gln
1045 1050 1055

Thr Val Tyr Glu Pro Gly Ser Phe Thr Pro Leu Ile Arg Val Glu Thr
1060 1065 1070
Glu Asn Gly Glu Arg Glu Lys Ala Gln Arg Arg Ser Leu Ala Glu Thr
1075 1080 1085
Leu Gln Gln Glu Gly Ser Glu Asn Gly His Gly Val Val Phe Pro Ala
1090 1095 1100
Glu Leu Val Arg Leu Leu Asp Arg Leu Glu Glu Glu Ile Arg Ala Asp
1105 1110 1115 1120
Arg Val Ser Ser Glu Ser Arg Ala Trp Leu Ala Gln Cys Gly Leu Thr
1125 1130 1135
Val Glu Gln Leu Ala Arg Gln Val Glu Pro Glu Tyr Thr Pro Ala Arg
1140 1145 1150
Lys Ala His Leu Tyr His Cys Asp His Arg Gly Leu Pro Leu Ala Leu
1155 1160 1165
Ile Ser Glu Asp Gly Asn Thr Ala Trp Ser Ala Glu Tyr Asp Glu Trp
1170 1175 1180
Gly Asn Gln Leu Asn Glu Glu Asn Pro His His Val Tyr Gln Pro Tyr
1185 1190 1195 1200
Arg Leu Pro Gly Gln Gln His Asp Glu Glu Ser Gly Leu Tyr Tyr Asn
1205 1210 1215
Arg His Arg Tyr Tyr Asp Pro Leu Gln Gly Arg Tyr Ile Thr Gln Asp
1220 1225 1230
Pro Met Gly Leu Lys Gly Gly Trp Asn Leu Tyr Gln Tyr Pro Leu Asn
1235 1240 1245
Pro Leu Gln Gln Ile Asp Pro Met Gly Leu Leu Gln Thr Trp Asp Asp
1250 1255 1260
Ala Arg Ser Gly Ala Cys Thr Gly Gly Val Cys Gly Val Leu Ser Arg
1265 1270 1275 1280
Ile Ile Gly Pro Ser Lys Phe Asp Ser Thr Ala Asp Ala Ala Leu Asp
1285 1290 1295
Ala Leu Lys Glu Thr Gln Asn Arg Ser Leu Cys Asn Asp Met Glu Tyr
1300 1305 1310
Ser Gly Ile Val Cys Lys Asp Thr Asn Gly Lys Tyr Phe Ala Ser Lys
1315 1320 1325
Ala Glu Thr Asp Asn Leu Arg Lys Glu Ser Tyr Pro Leu Lys Arg Lys
1330 1335 1340
Cys Pro Thr Gly Thr Asp Arg Val Ala Ala Tyr His Thr His Gly Ala
1345 1350 1355 1360
Asp Ser His Gly Asp Tyr Val Asp Glu Phe Phe Ser Ser Ser Asp Lys
1365 1370 1375
Asn Leu Val Arg Ser Lys Asp Asn Asn Leu Glu Ala Phe Tyr Leu Ala
1380 1385 1390
Thr Pro Asp Gly Arg Phe Glu Ala Leu Asn Asn Lys Gly Glu Tyr Ile
1395 1400 1405
Phe Ile Arg Asn Ser Val Pro Gly Leu Ser Ser Val Cys Ile Pro Tyr
1410 1415 1420
His Asp
1425

<210> 341
<211> 122
<212> PRT
<213> E. Coli

<400> 341
Met Lys Tyr Ser Ser Ile Phe Ser Met Leu Ser Phe Phe Ile Leu Phe

```
 1               5                  10                  15
Ala Cys Asn Glu Thr Ala Val Tyr Gly Ser Asp Glu Asn Ile Ile Phe
            20                  25                  30
Met Arg Tyr Val Glu Lys Leu His Leu Asp Lys Tyr Ser Val Lys Asn
        35                  40                  45
Thr Val Lys Thr Glu Thr Met Ala Ile Gln Leu Ala Glu Ile Tyr Val
    50                  55                  60
Arg Tyr Arg Tyr Gly Glu Arg Ile Ala Glu Glu Glu Lys Pro Tyr Leu
65                  70                  75                  80
Ile Thr Glu Leu Pro Asp Ser Trp Val Val Glu Gly Ala Lys Leu Pro
                85                  90                  95
Tyr Glu Val Ala Gly Gly Val Phe Ile Ile Glu Ile Asn Lys Lys Asn
            100                 105                 110
Gly Cys Val Leu Asn Phe Leu His Ser Lys
        115                 120
```

<210> 342
<211> 236
<212> PRT
<213> E. Coli

<400> 342

```
Met Leu Ala Leu Met Asp Ala Asp Gly Asn Ile Ala Trp Ser Gly Glu
 1               5                  10                  15
Tyr Asp Glu Trp Gly Asn Gln Leu Asn Glu Glu Asn Pro His His Leu
            20                  25                  30
His Gln Pro Tyr Arg Leu Pro Gly Gln Gln Tyr Asp Lys Glu Ser Gly
        35                  40                  45
Leu Tyr Tyr Asn Arg Asn Arg Tyr Tyr Asp Pro Leu Gln Gly Arg Tyr
    50                  55                  60
Ile Thr Gln Asp Pro Ile Gly Leu Glu Gly Gly Trp Ser Leu Tyr Ala
65                  70                  75                  80
Tyr Pro Leu Asn Pro Val Asn Gly Ile Asp Pro Leu Gly Leu Ser Pro
                85                  90                  95
Ala Asp Val Ala Leu Ile Arg Arg Lys Asp Gln Leu Asn His Gln Arg
            100                 105                 110
Ala Trp Asp Ile Leu Ser Asp Thr Tyr Glu Asp Met Lys Arg Leu Asn
        115                 120                 125
Leu Gly Gly Thr Asp Gln Phe Phe His Cys Met Ala Phe Cys Arg Val
    130                 135                 140
Ser Lys Leu Asn Asp Ala Gly Val Ser Arg Ser Ala Lys Gly Leu Gly
145                 150                 155                 160
Tyr Glu Lys Glu Ile Arg Asp Tyr Gly Leu Asn Leu Phe Gly Met Tyr
                165                 170                 175
Gly Arg Lys Val Lys Leu Ser His Ser Glu Met Ile Glu Asp Asn Lys
            180                 185                 190
Lys Asp Leu Ala Val Asn Asp His Gly Leu Thr Cys Pro Ser Thr Thr
        195                 200                 205
Asp Cys Ser Asp Arg Cys Ser Asp Tyr Ile Asn Pro Glu His Lys Lys
    210                 215                 220
Thr Ile Lys Ala Leu Gln Asp Ala Gly Tyr Leu Lys
225                 230                 235
```

<210> 343
<211> 86

<212> PRT
<213> E. Coli

<400> 343

```
Met Leu Ala Ile Ser Ser Asn Leu Ser Lys Met Ile Ile Phe Ile Phe
 1               5                  10                  15
Ala Ile Ile Ile Ile Val Val Leu Cys Val Ile Thr Tyr Leu Tyr Leu
            20                  25                  30
Tyr Lys Asp Glu Ser Leu Val Ser Lys His Tyr Ile Asn Tyr Met Ala
        35                  40                  45
Ile Pro Glu Asn Asp Gly Val Phe Thr Trp Leu Pro Asp Phe Phe Pro
    50                  55                  60
His Val Ala Val Asp Ile Ser Ile Tyr Thr Asn Val Glu Asp Asp Tyr
65                  70                  75                  80
Phe Phe Leu Ile Phe Pro
                85
```

<210> 344
<211> 63
<212> PRT
<213> E. Coli

<400> 344

```
Met Arg Ala Arg Glu Gln Val Ala Lys Ile Val Ser Lys Asn Asp Pro
 1               5                  10                  15
Asp Thr Lys Lys Val Trp Cys Lys Tyr Gly Lys Ile Pro Gly Gln Gly
            20                  25                  30
Asp Gly Val Asn Leu Phe Phe Val Gly Glu Ile Asn Val Thr His Tyr
        35                  40                  45
Phe Ile Thr Asn Ile Gly Ala Gly Leu Pro Asp Ala Cys Ala Glu
    50                  55                  60
```

<210> 345
<211> 167
<212> PRT
<213> E. Coli

<400> 345

```
Met Pro Gly Asn Ser Pro His Tyr Gly Arg Trp Pro Gln His Asp Phe
 1               5                  10                  15
Thr Ser Leu Lys Lys Leu Arg Pro Gln Ser Val Thr Ser Arg Ile Gln
            20                  25                  30
Pro Gly Ser Asp Val Ile Val Cys Ala Glu Met Asp Glu Gln Trp Gly
        35                  40                  45
Tyr Val Gly Ala Lys Ser Arg Gln Arg Trp Leu Phe Tyr Ala Tyr Asp
    50                  55                  60
Ser Leu Arg Lys Thr Val Val Ala His Val Phe Gly Glu Arg Thr Met
65                  70                  75                  80
Ala Thr Leu Gly Arg Leu Met Ser Leu Leu Ser Pro Phe Asp Val Val
                85                  90                  95
Ile Trp Met Thr Asp Gly Trp Pro Leu Tyr Glu Ser Arg Leu Lys Gly
            100                 105                 110
Lys Leu His Val Ile Ser Lys Arg Tyr Thr Gln Arg Ile Glu Arg His
```

```
        115                 120                 125
Asn Leu Asn Leu Arg Gln His Leu Ala Arg Leu Gly Arg Lys Ser Leu
    130                 135                 140
Ser Phe Ser Lys Ser Val Glu Leu His Asp Lys Val Ile Gly His Tyr
145                 150                 155                 160
Leu Asn Ile Lys His Tyr Gln
                165
```

<210> 346
<211> 91
<212> PRT
<213> E. Coli

<400> 346

```
Met Ala Ser Val Ser Ile Ser Cys Pro Ser Cys Ser Ala Thr Asp Gly
 1               5                  10                  15
Val Val Arg Asn Gly Lys Ser Thr Ala Gly His Gln Arg Tyr Leu Cys
            20                  25                  30
Ser His Cys Arg Lys Thr Trp Gln Leu Gln Phe Thr Tyr Thr Ala Ser
        35                  40                  45
Gln Pro Gly Thr His Gln Lys Ile Ile Asp Met Ala Met Asn Gly Val
    50                  55                  60
Gly Cys Arg Ala Thr Ala Arg Ile Met Gly Val Gly Leu Asn Thr Ile
65                  70                  75                  80
Leu Arg His Leu Lys Asn Ser Gly Arg Ser Arg
                85                  90
```

<210> 347
<211> 138
<212> PRT
<213> E. Coli

<400> 347

```
Met Met Thr Lys Thr Gln Ile Asn Lys Leu Ile Lys Met Met Asn Asp
 1               5                  10                  15
Leu Asp Tyr Pro Phe Glu Ala Pro Leu Lys Glu Ser Phe Ile Glu Ser
            20                  25                  30
Ile Ile Gln Ile Glu Phe Asn Ser Asn Ser Thr Asn Cys Leu Glu Lys
        35                  40                  45
Leu Cys Asn Glu Val Ser Ile Leu Phe Lys Asn Gln Pro Asp Tyr Leu
    50                  55                  60
Thr Phe Leu Arg Ala Met Asp Gly Phe Glu Val Asn Gly Leu Arg Leu
65                  70                  75                  80
Phe Ser Leu Ser Ile Pro Glu Pro Ser Val Lys Asn Leu Phe Ala Val
                85                  90                  95
Asn Glu Phe Tyr Arg Asn Asn Asp Asp Phe Ile Asn Pro Asp Leu Gln
            100                 105                 110
Glu Arg Leu Val Ile Gly Asp Tyr Ser Ile Ser Ile Phe Thr Tyr Asp
        115                 120                 125
Ile Lys Gly Asp Ala Ala Asn Leu Leu Ile
    130                 135
```

<210> 348

<211> 392
<212> PRT
<213> E. Coli

<400> 348

```
Met Ser Asn Ile Val Tyr Leu Thr Val Thr Gly Glu Gln Gln Gly Ser
 1               5                  10                  15
Ile Ser Ala Gly Cys Gly Thr Ser Glu Ser Thr Gly Asn Arg Trp Gln
            20                  25                  30
Ser Gly His Glu Asp Glu Ile Phe Thr Phe Ser Leu Leu Asn Asn Ile
        35                  40                  45
Asn Asn Thr Gly Leu Gly Ser Gln Phe His Gly Ile Thr Phe Cys Lys
    50                  55                  60
Leu Ile Asp Lys Ser Thr Pro Leu Phe Ile Asn Ser Ile Asn Asn Asn
65                  70                  75                  80
Glu Gln Leu Phe Met Gly Phe Asp Phe Tyr Arg Ile Asn Arg Phe Gly
                85                  90                  95
Arg Leu Glu Lys Tyr Tyr Tyr Ile Gln Leu Arg Gly Ala Phe Leu Ser
            100                 105                 110
Ala Ile His His Gln Ile Ile Glu Asn Gln Leu Asp Thr Glu Thr Ile
        115                 120                 125
Thr Ile Ser Tyr Glu Phe Ile Leu Cys Gln His Leu Ile Ala Asn Thr
    130                 135                 140
Glu Phe Ser Tyr Leu Ala Leu Pro Glu Asn Tyr Asn Arg Leu Phe Leu
145                 150                 155                 160
Pro Asn Ser Lys Asn Gln Thr Asn Asn Arg Phe Lys Thr Leu Asn Ser
                165                 170                 175
Lys Ala Ile Gly Arg Leu Leu Ala Ala Gly Gly Val Tyr Asn Gly Asn
            180                 185                 190
Ile Glu Gly Phe Arg Asp Thr Ala Glu Lys Leu Gly Gly Asp Ala Ile
        195                 200                 205
Lys Gly Tyr Asp Gln Ile Leu Asn Glu Lys Thr Ala Gly Ile Ala Ile
    210                 215                 220
Ala Thr Ala Ser Ile Leu Leu Thr Lys Arg Ser Asn Val Asp Thr Tyr
225                 230                 235                 240
Thr Glu Ile Asn Ser Tyr Leu Gly Lys Leu Arg Gly Gln Gln Lys Leu
                245                 250                 255
Leu Asp Gly Ile Asp Ile Ile Glu Ile Ile Tyr Ile Lys Arg Pro Ser
            260                 265                 270
Lys Asp Leu Ala Asn Leu Arg Lys Glu Phe Asn Lys Thr Val Arg Lys
        275                 280                 285
Asn Phe Leu Ile Lys Leu Ala Lys Thr Ser Glu Ala Ser Gly Arg Phe
    290                 295                 300
Asn Ala Glu Asp Leu Leu Arg Met Arg Lys Gly Asn Val Pro Leu Asn
305                 310                 315                 320
Tyr Asn Val His His Lys Leu Ser Leu Asp Asp Gly Gly Thr Asn Asp
                325                 330                 335
Phe Glu Asn Leu Val Leu Ile Glu Asn Glu Pro Tyr His Lys Val Phe
            340                 345                 350
Thr Asn Met Gln Ser Arg Ile Ala Lys Gly Ile Leu Val Gly Glu Ser
        355                 360                 365
Lys Ile Thr Pro Trp Ala Ile Pro Ser Gly Ser Ile Tyr Pro Pro Met
    370                 375                 380
Lys Asn Ile Met Asp His Thr Lys
385                 390
```

<210> 349
<211> 221
<212> PRT
<213> E. Coli

<400> 349

```
Met Val Leu Ala Leu Asn Tyr Asn Met His Gly Val Asn Ile Arg Ser
 1               5                  10                  15
Glu Asn Ala Ala Lys Pro His Thr Met Pro Ser Arg Tyr Leu Cys Glu
            20                  25                  30
Tyr Ile Arg Ser Ile Glu Lys Asn Gly His Ala Leu Asp Phe Gly Cys
        35                  40                  45
Gly Lys Leu Arg Tyr Ser Asp Glu Leu Ile Ser Lys Phe Asp Glu Val
    50                  55                  60
Thr Phe Leu Asp Ser Lys Arg Gln Leu Glu Arg Glu Gln Ile Ile Arg
65                  70                  75                  80
Gly Ile Lys Thr Lys Ile Ile Asp Tyr Val Pro Arg Tyr Tyr Lys Asn
                85                  90                  95
Ala Asn Thr Val Ala Phe Glu Asp Val Asp Lys Ile Ile Gly Gly Tyr
            100                 105                 110
Asp Phe Ile Leu Cys Ser Asn Val Leu Ser Ala Val Pro Cys Arg Asp
        115                 120                 125
Thr Ile Asp Lys Ile Val Leu Ser Ile Lys Arg Leu Leu Lys Ser Gly
    130                 135                 140
Gly Glu Thr Leu Ile Val Asn Gln Tyr Lys Ser Ser Tyr Phe Lys Lys
145                 150                 155                 160
Tyr Glu Thr Gly Arg Lys His Leu Tyr Gly Tyr Ile Tyr Lys Asn Ser
                165                 170                 175
Lys Ser Val Ser Tyr Tyr Gly Leu Leu Asp Glu Leu Ala Val Gln Glu
            180                 185                 190
Ile Cys Ser Ser His Gly Leu Glu Ile Leu Lys Ser Trp Ser Lys Ala
        195                 200                 205
Gly Ser Ser Tyr Val Thr Val Gly Ser Cys Asn Ala Ile
    210                 215                 220
```

<210> 350
<211> 234
<212> PRT
<213> E. Coli

<400> 350

```
Met Asn Asn Met Phe Glu Pro Pro Lys Asn Tyr Asn Glu Met Leu Pro
 1               5                  10                  15
Lys Leu His Lys Ala Thr Phe Leu Asn Thr Leu Ile Tyr Cys Ile Leu
            20                  25                  30
Leu Val Ile Tyr Glu Tyr Ile Pro Leu Ile Thr Leu Pro Thr Lys Tyr
        35                  40                  45
Val Pro Pro Ile Lys Asp His Glu Ser Phe Ile Asn Trp Ala Leu Ser
    50                  55                  60
Phe Gly Ile Leu Pro Cys Ala Phe Ala Ile Phe Ala Tyr Leu Ile Ser
65                  70                  75                  80
Gly Ala Leu Asp Leu His Asn Asn Ala Ala Lys Leu Leu Arg Val Arg
                85                  90                  95
Tyr Leu Trp Asp Lys His Leu Ile Ile Lys Pro Leu Ser Arg Arg Ala
            100                 105                 110
```

```
Gly Val Asn Arg Lys Leu Asn Lys Asp Glu Ala His Asn Val Met Ser
        115                 120                 125
Asn Leu Tyr Tyr Pro Glu Val Arg Lys Ile Glu Asp Lys His Tyr Ile
    130                 135                 140
Glu Leu Phe Trp Asn Lys Val Tyr Tyr Phe Trp Ile Phe Phe Glu Phe
145                 150                 155                 160
Ser Ile Ile Ala Leu Ile Ser Phe Leu Ile Ile Phe Phe Cys Lys Gln
                165                 170                 175
Met Asp Ile Phe His Val Glu Gly Ser Leu Leu Ser Leu Phe Phe Phe
            180                 185                 190
Val Ile Leu Ser Phe Ser Val Ser Gly Ile Ile Phe Ala Leu Thr Val
        195                 200                 205
Lys Pro Arg Thr Glu Ser Gln Val Gly Lys Ile Pro Asp Asp Lys Ile
    210                 215                 220
Lys Glu Phe Phe Thr Lys Asn Asn Ile Asn
225                 230
```

<210> 351
<211> 94
<212> PRT
<213> E. Coli

<400> 351

```
Met Phe Thr Ile Asn Ala Glu Val Arg Lys Glu Gln Gly Lys Gly Ala
 1               5                  10                  15
Ser Arg Arg Leu Arg Ala Ala Asn Lys Phe Pro Ala Ile Ile Tyr Gly
            20                  25                  30
Gly Lys Glu Ala Pro Leu Ala Ile Glu Leu Asp His Asp Lys Val Met
        35                  40                  45
Asn Met Gln Ala Lys Ala Glu Phe Tyr Ser Glu Val Leu Thr Ile Val
    50                  55                  60
Val Asp Gly Lys Glu Ile Lys Val Lys Ala Gln Asp Val Gln Arg His
65                  70                  75                  80
Pro Tyr Lys Pro Lys Leu Gln His Ile Asp Phe Val Arg Ala
                85                  90
```

<210> 352
<211> 658
<212> PRT
<213> E. Coli

<400> 352

```
Met Val Leu Phe Tyr Arg Ala His Trp Arg Asp Tyr Lys Asn Asp Gln
 1               5                  10                  15
Val Arg Ile Met Met Asn Leu Thr Thr Leu Thr His Arg Asp Ala Leu
            20                  25                  30
Cys Leu Asn Ala Arg Phe Thr Ser Arg Glu Glu Ala Ile His Ala Leu
        35                  40                  45
Thr Gln Arg Leu Ala Ala Leu Gly Lys Ile Ser Ser Thr Glu Gln Phe
    50                  55                  60
Leu Glu Glu Val Tyr Arg Arg Glu Ser Leu Gly Pro Thr Ala Leu Gly
65                  70                  75                  80
Glu Gly Leu Ala Val Pro His Gly Lys Thr Ala Ala Val Lys Glu Ala
                85                  90                  95
```

Ala Phe Ala Val Ala Thr Leu Ser Glu Pro Leu Gln Trp Glu Gly Val
100 105 110
Asp Gly Pro Glu Ala Val Asp Leu Val Val Leu Leu Ala Ile Pro Pro
115 120 125
Asn Glu Ala Gly Thr Thr His Met Gln Leu Leu Thr Ala Leu Thr Thr
130 135 140
Arg Leu Ala Asp Asp Glu Ile Arg Ala Arg Ile Gln Ser Ala Thr Thr
145 150 155 160
Pro Asp Glu Leu Leu Ser Ala Leu Asp Asp Lys Gly Gly Thr Gln Pro
165 170 175
Ser Ala Ser Phe Ser Asn Ala Pro Thr Ile Val Cys Val Thr Ala Cys
180 185 190
Pro Ala Gly Ile Ala His Thr Tyr Met Ala Ala Glu Tyr Leu Glu Lys
195 200 205
Ala Gly Arg Lys Leu Gly Val Asn Val Tyr Val Glu Lys Gln Gly Ala
210 215 220
Asn Gly Ile Glu Gly Arg Leu Thr Ala Asp Gln Leu Asn Ser Ala Thr
225 230 235 240
Ala Cys Ile Phe Ala Ala Glu Val Ala Ile Lys Glu Ser Glu Arg Phe
245 250 255
Asn Gly Ile Pro Ala Leu Ser Val Pro Val Ala Glu Pro Ile Arg His
260 265 270
Ala Glu Ala Leu Ile Gln Gln Ala Leu Thr Leu Lys Arg Ser Asp Glu
275 280 285
Thr Arg Thr Val Gln Gln Asp Thr Gln Pro Val Lys Ser Val Lys Thr
290 295 300
Glu Leu Lys Gln Ala Leu Leu Ser Gly Ile Ser Phe Ala Val Pro Leu
305 310 315 320
Ile Val Ala Gly Gly Thr Val Leu Ala Val Ala Val Leu Leu Ser Gln
325 330 335
Ile Phe Gly Leu Gln Asp Leu Phe Asn Glu Glu Asn Ser Trp Leu Trp
340 345 350
Met Tyr Arg Lys Leu Gly Gly Gly Leu Leu Gly Ile Leu Met Val Pro
355 360 365
Val Leu Ala Ala Tyr Thr Ala Tyr Ser Leu Ala Asp Lys Pro Ala Leu
370 375 380
Ala Pro Gly Phe Ala Ala Gly Leu Ala Ala Asn Met Ile Gly Ser Gly
385 390 395 400
Phe Leu Gly Ala Val Val Gly Gly Leu Ile Ala Gly Tyr Leu Met Arg
405 410 415
Trp Val Lys Asn His Leu Arg Leu Ser Ser Lys Phe Asn Gly Phe Leu
420 425 430
Thr Phe Tyr Leu Tyr Pro Val Leu Gly Thr Leu Gly Ala Gly Ser Leu
435 440 445
Met Leu Phe Val Val Gly Glu Pro Val Ala Trp Ile Asn Asn Ser Leu
450 455 460
Thr Ala Trp Leu Asn Gly Leu Ser Gly Ser Asn Ala Leu Leu Leu Gly
465 470 475 480
Ala Ile Leu Gly Phe Met Cys Ser Phe Asp Leu Gly Gly Pro Val Asn
485 490 495
Lys Ala Ala Tyr Ala Phe Cys Leu Gly Ala Met Ala Asn Gly Val Tyr
500 505 510
Gly Pro Tyr Ala Ile Phe Ala Ser Val Lys Met Val Ser Ala Phe Thr
515 520 525
Val Thr Ala Ser Thr Met Leu Ala Pro Arg Leu Phe Lys Glu Phe Glu
530 535 540
Ile Glu Thr Gly Lys Ser Thr Trp Leu Leu Gly Leu Ala Gly Ile Thr

```
545                 550                 555                 560
Glu Gly Ala Ile Pro Met Ala Ile Glu Asp Pro Leu Arg Val Ile Gly
                565                 570                 575
Ser Phe Val Leu Gly Ser Met Val Thr Gly Ala Ile Val Gly Ala Met
            580                 585                 590
Asn Ile Gly Leu Ser Thr Pro Gly Ala Gly Ile Phe Ser Leu Phe Leu
        595                 600                 605
Leu His Asp Asn Gly Ala Gly Gly Val Met Ala Ala Ile Gly Trp Phe
    610                 615                 620
Gly Ala Ala Leu Val Gly Ala Ala Ile Ser Thr Ala Ile Leu Leu Met
625                 630                 635                 640
Trp Arg Arg His Ala Val Lys His Gly Asn Tyr Leu Thr Asp Gly Val
                645                 650                 655
Met Pro
```

<210> 353
<211> 877
<212> PRT
<213> E. Coli

<400> 353

```
Met Lys Ala Val Ser Arg Val His Ile Thr Pro His Met His Trp Asp
 1               5                  10                  15
Arg Glu Trp Tyr Phe Thr Thr Glu Glu Ser Arg Ile Leu Leu Val Asn
            20                  25                  30
Asn Met Glu Glu Ile Leu Cys Arg Leu Glu Gln Asp Asn Glu Tyr Lys
        35                  40                  45
Tyr Tyr Val Leu Asp Gly Gln Thr Ala Ile Leu Glu Asp Tyr Phe Ala
    50                  55                  60
Val Lys Pro Glu Asn Lys Asp Arg Val Lys Lys Gln Val Glu Ala Gly
65                  70                  75                  80
Lys Leu Ile Ile Gly Pro Trp Tyr Thr Gln Thr Asp Thr Thr Ile Val
                85                  90                  95
Ser Ala Glu Ser Ile Val Arg Asn Leu Met Tyr Gly Met Arg Asp Cys
            100                 105                 110
Leu Ala Phe Gly Glu Pro Met Lys Ile Gly Tyr Leu Pro Asp Ser Phe
        115                 120                 125
Gly Met Ser Gly Gln Leu Pro His Ile Tyr Asn Gly Phe Gly Ile Thr
    130                 135                 140
Arg Thr Met Phe Trp Arg Gly Cys Ser Glu Arg His Gly Thr Asp Lys
145                 150                 155                 160
Thr Glu Phe Leu Trp Gln Ser Ser Asp Gly Ser Glu Val Thr Ala Gln
                165                 170                 175
Val Leu Pro Leu Gly Tyr Ala Ile Gly Lys Tyr Leu Pro Ala Asp Glu
            180                 185                 190
Asn Gly Leu Arg Lys Arg Leu Asp Ser Tyr Phe Asp Val Leu Glu Lys
        195                 200                 205
Ala Ser Val Thr Lys Glu Ile Leu Leu Pro Asn Gly His Asp Gln Met
    210                 215                 220
Pro Leu Gln Gln Asn Ile Phe Glu Val Met Asp Lys Leu Arg Glu Ile
225                 230                 235                 240
Tyr Pro Gln Arg Lys Phe Val Met Ser Arg Phe Glu Glu Val Phe Glu
                245                 250                 255
Lys Ile Glu Ala Gln Arg Asp Asn Leu Ala Thr Leu Lys Gly Glu Phe
            260                 265                 270
```

Ile Asp Gly Lys Tyr Met Arg Val His Arg Thr Ile Gly Ser Thr Arg
275 280 285
Met Asp Ile Lys Ile Ala His Ala Arg Ile Glu Asn Lys Ile Val Asn
290 295 300
Leu Leu Glu Pro Leu Ala Thr Leu Ala Trp Thr Leu Gly Phe Glu Tyr
305 310 315 320
His His Gly Leu Leu Glu Lys Met Trp Lys Glu Ile Leu Lys Asn His
325 330 335
Ala His Asp Ser Ile Gly Cys Cys Cys Ser Asp Lys Val His Arg Glu
340 345 350
Ile Val Ala Arg Phe Glu Leu Ala Glu Asp Met Ala Asp Asn Leu Ile
355 360 365
Arg Phe Tyr Met Arg Lys Ile Ala Asp Asn Met Pro Gln Ser Asp Ala
370 375 380
Asp Lys Leu Val Leu Phe Asn Leu Met Pro Trp Pro Arg Glu Glu Val
385 390 395 400
Ile Asn Thr Thr Val Arg Leu Arg Ala Ser Gln Phe Asn Leu Arg Asp
405 410 415
Asp Arg Gly Gln Pro Val Pro Tyr Phe Ile Arg His Ala Arg Glu Ile
420 425 430
Asp Pro Gly Leu Ile Asp Arg Gln Ile Val His Tyr Gly Asn Tyr Asp
435 440 445
Pro Phe Met Glu Phe Asp Ile Gln Ile Asn Gln Ile Val Pro Ser Met
450 455 460
Gly Tyr Arg Thr Leu Tyr Ile Glu Ala Asn Gln Pro Gly Asn Val Ile
465 470 475 480
Ala Ala Lys Ser Asp Ala Glu Gly Ile Leu Glu Asn Ala Phe Trp Gln
485 490 495
Ile Ala Leu Asn Glu Asp Gly Ser Leu Gln Leu Val Asp Lys Asp Ser
500 505 510
Gly Val Arg Tyr Asp Arg Val Leu Gln Ile Glu Glu Ser Ser Asp Asp
515 520 525
Gly Asp Glu Tyr Asp Tyr Ser Pro Ala Lys Glu Glu Trp Val Ile Thr
530 535 540
Ala Ala Asn Ala Lys Pro Gln Cys Asp Ile Ile His Glu Ala Trp Gln
545 550 555 560
Ser Arg Ala Val Ile Arg Tyr Asp Met Ala Val Pro Leu Asn Leu Ser
565 570 575
Glu Arg Ser Ala Arg Gln Ser Thr Gly Arg Val Gly Val Val Leu Val
580 585 590
Val Thr Leu Ser His Asn Ser Arg Arg Ile Asp Val Asp Ile Asn Leu
595 600 605
Asp Asn Gln Ala Asp Asp His Arg Leu Arg Val Leu Val Pro Thr Pro
610 615 620
Phe Asn Thr Asp Ser Val Leu Ala Asp Thr Gln Phe Gly Ser Leu Thr
625 630 635 640
Arg Pro Val Asn Asp Ser Ala Met Asn Asn Trp Gln Gln Glu Gly Trp
645 650 655
Lys Glu Ala Pro Val Pro Val Trp Asn Met Leu Asn Tyr Val Ala Leu
660 665 670
Gln Glu Gly Arg Asn Gly Met Ala Val Phe Ser Glu Gly Leu Arg Glu
675 680 685
Phe Glu Val Ile Gly Glu Glu Lys Lys Thr Phe Ala Ile Thr Leu Leu
690 695 700
Arg Gly Val Gly Leu Leu Gly Lys Glu Asp Leu Leu Leu Arg Pro Gly
705 710 715 720
Arg Pro Ser Gly Ile Lys Met Pro Val Pro Asp Ser Gln Leu Arg Gly

```
                725                 730                 735
Leu Leu Ser Cys Arg Leu Ser Leu Leu Ser Tyr Thr Gly Thr Pro Thr
            740                 745                 750
Ala Ala Gly Val Ala Gln Gln Ala Arg Ala Trp Leu Thr Pro Val Gln
        755                 760                 765
Cys Tyr Asn Lys Ile Pro Trp Asp Val Met Lys Leu Asn Lys Ala Gly
    770                 775                 780
Phe Asn Val Pro Glu Ser Tyr Ser Leu Leu Lys Met Pro Pro Val Gly
785                 790                 795                 800
Cys Leu Ile Ser Ala Leu Lys Lys Ala Glu Asp Arg Gln Glu Val Ile
                805                 810                 815
Leu Arg Leu Phe Asn Pro Ala Glu Ser Ala Thr Cys Asp Ala Thr Val
            820                 825                 830
Ala Phe Ser Arg Glu Val Ile Ser Cys Ser Glu Thr Met Met Asp Glu
        835                 840                 845
His Ile Thr Thr Glu Glu Asn Gln Gly Ser Asn Leu Ser Gly Pro Phe
    850                 855                 860
Leu Pro Gly Gln Ser Arg Thr Phe Ser Tyr Arg Leu Ala
865                 870                 875
```

<210> 354
<211> 523
<212> PRT
<213> E. Coli

<400> 354

```
Met Met Leu Asp Ile Val Glu Leu Ser Arg Leu Gln Phe Ala Leu Thr
 1               5                  10                  15
Ala Met Tyr His Phe Leu Phe Val Pro Leu Thr Leu Gly Met Ala Phe
            20                  25                  30
Leu Leu Ala Ile Met Glu Thr Val Tyr Val Leu Ser Gly Lys Gln Ile
        35                  40                  45
Tyr Lys Asp Met Thr Lys Phe Trp Gly Lys Leu Phe Gly Ile Asn Phe
    50                  55                  60
Ala Leu Gly Val Ala Thr Gly Leu Thr Met Glu Phe Gln Phe Gly Thr
65                  70                  75                  80
Asn Trp Ser Tyr Tyr Ser His Tyr Val Gly Asp Ile Phe Gly Ala Pro
                85                  90                  95
Leu Ala Ile Glu Gly Leu Met Ala Phe Phe Leu Glu Ser Thr Phe Val
            100                 105                 110
Gly Leu Phe Phe Phe Gly Trp Asp Arg Leu Gly Lys Val Gln His Met
        115                 120                 125
Cys Val Thr Trp Leu Val Ala Leu Gly Ser Asn Leu Ser Ala Leu Trp
    130                 135                 140
Ile Leu Val Ala Asn Gly Trp Met Gln Asn Pro Ile Ala Ser Asp Phe
145                 150                 155                 160
Asn Phe Glu Thr Met Arg Met Glu Met Val Ser Phe Ser Glu Leu Val
                165                 170                 175
Leu Asn Pro Val Ala Gln Val Lys Phe Val His Thr Val Ala Ser Gly
            180                 185                 190
Tyr Val Thr Gly Ala Met Phe Ile Leu Gly Ile Ser Ala Trp Tyr Met
        195                 200                 205
Leu Lys Gly Arg Asp Phe Ala Phe Ala Lys Arg Ser Phe Ala Ile Ala
    210                 215                 220
Ala Ser Phe Gly Met Ala Ala Val Leu Ser Val Ile Val Leu Gly Asp
225                 230                 235                 240
```

Glu Ser Gly Tyr Glu Met Gly Asp Val Gln Lys Thr Lys Leu Ala Ala
245 250 255
Ile Glu Ala Glu Trp Glu Thr Gln Pro Ala Pro Ala Ala Phe Thr Leu
260 265 270
Phe Gly Ile Pro Asp Gln Glu Glu Glu Thr Asn Lys Phe Ala Ile Gln
275 280 285
Ile Pro Tyr Ala Leu Gly Ile Ile Ala Thr Arg Ser Val Asp Thr Pro
290 295 300
Val Ile Gly Leu Lys Glu Leu Met Val Gln His Glu Glu Arg Ile Arg
305 310 315 320
Asn Gly Met Lys Ala Tyr Ser Leu Leu Glu Gln Leu Arg Ser Gly Ser
325 330 335
Thr Asp Gln Ala Val Arg Asp Gln Phe Asn Ser Met Lys Lys Asp Leu
340 345 350
Gly Tyr Gly Leu Leu Leu Lys Arg Tyr Thr Pro Asn Val Ala Asp Ala
355 360 365
Thr Glu Ala Gln Ile Gln Gln Ala Thr Lys Asp Ser Ile Pro Arg Val
370 375 380
Ala Pro Leu Tyr Phe Ala Phe Arg Ile Met Val Ala Cys Gly Phe Leu
385 390 395 400
Leu Leu Ala Ile Ile Ala Leu Ser Phe Trp Ser Val Ile Arg Asn Arg
405 410 415
Ile Gly Glu Lys Lys Trp Leu Leu Arg Ala Ala Leu Tyr Gly Ile Pro
420 425 430
Leu Pro Trp Ile Ala Val Glu Ala Gly Trp Phe Val Ala Glu Tyr Gly
435 440 445
Arg Gln Pro Trp Ala Ile Gly Glu Val Leu Pro Thr Ala Val Ala Asn
450 455 460
Ser Ser Leu Thr Ala Gly Asp Leu Ile Phe Ser Met Val Leu Ile Cys
465 470 475 480
Gly Leu Tyr Thr Leu Phe Leu Val Ala Glu Leu Phe Leu Met Phe Lys
485 490 495
Phe Ala Arg Leu Gly Pro Ser Ser Leu Lys Thr Gly Arg Tyr His Phe
500 505 510
Glu Gln Ser Ser Thr Thr Thr Gln Pro Ala Arg
515 520

<210> 355
<211> 379
<212> PRT
<213> E. Coli

<400> 355
Met Ile Asp Tyr Glu Val Leu Arg Phe Ile Trp Trp Leu Leu Val Gly
1 5 10 15
Val Leu Leu Ile Gly Phe Ala Val Thr Asp Gly Phe Asp Met Gly Val
20 25 30
Gly Met Leu Thr Arg Phe Leu Gly Arg Asn Asp Thr Glu Arg Arg Ile
35 40 45
Met Ile Asn Ser Ile Ala Pro His Trp Asp Gly Asn Gln Val Trp Leu
50 55 60
Ile Thr Ala Gly Gly Ala Leu Phe Ala Ala Trp Pro Met Val Tyr Ala
65 70 75 80
Ala Ala Phe Ser Gly Phe Tyr Val Ala Met Ile Leu Val Leu Ala Ser
85 90 95
Leu Phe Phe Arg Pro Val Gly Phe Asp Tyr Arg Ser Lys Ile Glu Glu

```
            100                 105                 110
Thr Arg Trp Arg Asn Met Trp Asp Trp Gly Ile Phe Ile Gly Ser Phe
        115                 120                 125
Val Pro Pro Leu Val Ile Gly Val Ala Phe Gly Asn Leu Leu Gln Gly
    130                 135                 140
Val Pro Phe Asn Val Asp Glu Tyr Leu Arg Leu Tyr Tyr Thr Gly Asn
145                 150                 155                 160
Phe Phe Gln Leu Leu Asn Pro Phe Gly Leu Leu Ala Gly Val Val Ser
                165                 170                 175
Val Gly Met Ile Ile Thr Gln Gly Ala Thr Tyr Leu Gln Met Arg Thr
            180                 185                 190
Val Gly Glu Leu His Leu Arg Thr Arg Ala Thr Ala Gln Val Ala Ala
        195                 200                 205
Leu Val Thr Leu Val Cys Phe Ala Leu Ala Gly Val Trp Val Met Tyr
    210                 215                 220
Gly Ile Asp Gly Tyr Val Val Lys Ser Thr Met Asp His Tyr Ala Ala
225                 230                 235                 240
Ser Asn Pro Leu Asn Lys Glu Val Val Arg Glu Ala Gly Ala Trp Leu
                245                 250                 255
Val Asn Phe Asn Asn Thr Pro Ile Leu Trp Ala Ile Pro Ala Leu Gly
            260                 265                 270
Val Val Leu Pro Leu Leu Thr Ile Leu Thr Ala Arg Met Asp Lys Ala
        275                 280                 285
Ala Trp Ala Phe Val Phe Ser Ser Leu Thr Leu Ala Cys Ile Ile Leu
    290                 295                 300
Thr Ala Gly Ile Ala Met Phe Pro Phe Val Met Pro Ser Ser Thr Met
305                 310                 315                 320
Met Asn Ala Ser Leu Thr Met Trp Asp Ala Thr Ser Ser Gln Leu Thr
                325                 330                 335
Leu Asn Val Met Thr Trp Val Ala Val Val Leu Val Pro Ile Ile Leu
            340                 345                 350
Leu Tyr Thr Ala Trp Cys Tyr Trp Lys Met Phe Gly Arg Ile Thr Lys
        355                 360                 365
Glu Asp Ile Glu Arg Asn Thr His Ser Leu Tyr
    370                 375
```

<210> 356
<211> 456
<212> PRT
<213> E. Coli

<400> 356

```
Met Glu Leu Ser Ser Leu Thr Ala Val Ser Pro Val Asp Gly Arg Tyr
 1                   5                  10                  15
Gly Asp Lys Val Ser Ala Leu Arg Gly Ile Phe Ser Glu Tyr Gly Leu
            20                  25                  30
Leu Lys Phe Arg Val Gln Val Glu Val Arg Trp Leu Gln Lys Leu Ala
        35                  40                  45
Ala His Ala Ala Ile Lys Glu Val Pro Ala Phe Ala Ala Asp Ala Ile
    50                  55                  60
Gly Tyr Leu Asp Ala Ile Val Ala Ser Phe Ser Glu Glu Asp Ala Ala
65                  70                  75                  80
Arg Ile Lys Thr Ile Glu Arg Thr Thr Asn His Asp Val Lys Ala Val
                85                  90                  95
Glu Tyr Phe Leu Lys Glu Lys Val Ala Glu Ile Pro Glu Leu His Ala
            100                 105                 110
```

```
Val Ser Glu Phe Ile His Phe Ala Cys Thr Ser Glu Asp Ile Asn Asn
        115                 120                 125
Leu Ser His Ala Leu Met Leu Lys Thr Ala Arg Asp Glu Val Ile Leu
    130                 135                 140
Pro Tyr Trp Arg Gln Leu Ile Asp Gly Ile Lys Asp Leu Ala Val Gln
145                 150                 155                 160
Tyr Arg Asp Ile Pro Leu Leu Ser Arg Thr His Gly Gln Pro Ala Thr
                165                 170                 175
Pro Ser Thr Ile Gly Lys Glu Met Ala Asn Val Ala Tyr Arg Met Glu
            180                 185                 190
Arg Gln Tyr Arg Gln Leu Asn Gln Val Glu Ile Leu Gly Lys Ile Asn
        195                 200                 205
Gly Ala Val Gly Asn Tyr Asn Ala His Ile Ala Ala Tyr Pro Glu Val
    210                 215                 220
Asp Trp His Gln Phe Ser Glu Glu Phe Val Thr Ser Leu Gly Ile Gln
225                 230                 235                 240
Trp Asn Pro Tyr Thr Thr Gln Ile Glu Pro His Asp Tyr Ile Ala Glu
                245                 250                 255
Leu Phe Asp Cys Val Ala Arg Phe Asn Thr Ile Leu Ile Asp Phe Asp
            260                 265                 270
Arg Asp Val Trp Gly Tyr Ile Ala Leu Asn His Phe Lys Gln Lys Thr
        275                 280                 285
Ile Ala Gly Glu Ile Gly Ser Ser Thr Met Pro His Lys Val Asn Pro
    290                 295                 300
Ile Asp Phe Glu Asn Ser Glu Gly Asn Leu Gly Leu Ser Asn Ala Val
305                 310                 315                 320
Leu Gln His Leu Ala Ser Lys Leu Pro Val Ser Arg Trp Gln Arg Asp
                325                 330                 335
Leu Thr Asp Ser Thr Val Leu Arg Asn Leu Gly Val Gly Ile Gly Tyr
            340                 345                 350
Ala Leu Ile Ala Tyr Gln Ser Thr Leu Lys Gly Val Ser Lys Leu Glu
        355                 360                 365
Val Asn Arg Asp His Leu Leu Asp Glu Leu Asp His Asn Trp Glu Val
    370                 375                 380
Leu Ala Glu Pro Ile Gln Thr Val Met Arg Arg Tyr Gly Ile Glu Lys
385                 390                 395                 400
Pro Tyr Glu Lys Leu Lys Glu Leu Thr Arg Gly Lys Arg Val Asp Ala
                405                 410                 415
Glu Gly Met Lys Gln Phe Ile Asp Gly Leu Ala Leu Pro Glu Glu Glu
            420                 425                 430
Lys Ala Arg Leu Lys Ala Met Thr Pro Ala Asn Tyr Ile Gly Arg Ala
        435                 440                 445
Ile Thr Met Val Asp Glu Leu Lys
    450                 455


      <210> 357
      <211> 61
      <212> PRT
      <213> E. Coli

      <400> 357
Met Leu Ile Leu Thr Arg Arg Val Gly Glu Thr Leu Met Ile Gly Asp
 1               5                  10                  15
Glu Val Thr Val Thr Val Leu Gly Val Lys Gly Asn Gln Val Arg Ile
            20                  25                  30
Gly Val Asn Ala Pro Lys Glu Val Ser Val His Arg Glu Glu Ile Tyr
```

```
        35                  40                  45
Gln Arg Ile Gln Ala Glu Lys Ser Gln Gln Ser Ser Tyr
    50                  55                  60
```

<210> 358
<211> 93
<212> RNA
<213> E. Coli

<400> 358
ggugaggugg ccgagaggcu gaaggcgcuc cccugcuaag ggaguaugcg gucaaaagcu 60
gcauccgggg uucgaauccc cgccucaccg cca 93

<210> 359
<211> 200
<212> PRT
<213> E. Coli

<400> 359

```
Met Lys Asn Lys Ala Asp Asn Lys Lys Arg Asn Phe Leu Thr His Ser
 1               5                  10                  15
Glu Ile Glu Ser Leu Leu Lys Ala Ala Asn Thr Gly Pro His Ala Ala
            20                  25                  30
Arg Asn Tyr Cys Leu Thr Leu Leu Cys Phe Ile His Gly Phe Arg Ala
        35                  40                  45
Ser Glu Ile Cys Arg Leu Arg Ile Ser Asp Ile Asp Leu Lys Ala Lys
    50                  55                  60
Cys Ile Tyr Ile His Arg Leu Lys Lys Gly Phe Ser Thr Thr His Pro
65                  70                  75                  80
Leu Leu Asn Lys Glu Val Gln Ala Leu Lys Asn Trp Leu Ser Ile Arg
                85                  90                  95
Thr Ser Tyr Pro His Ala Glu Ser Glu Trp Val Phe Leu Ser Arg Lys
            100                 105                 110
Gly Asn Pro Leu Ser Arg Gln Gln Phe Tyr His Ile Ile Ser Thr Ser
        115                 120                 125
Gly Gly Asn Ala Gly Leu Ser Leu Glu Ile His Pro His Met Leu Arg
    130                 135                 140
His Ser Cys Gly Phe Ala Leu Ala Asn Met Gly Ile Asp Thr Arg Leu
145                 150                 155                 160
Ile Gln Asp Tyr Leu Gly His Arg Asn Ile Arg His Thr Val Trp Tyr
                165                 170                 175
Thr Ala Ser Asn Ala Gly Arg Phe Tyr Gly Ile Trp Asp Arg Ala Arg
            180                 185                 190
Gly Arg Gln Arg His Ala Val Leu
        195                 200
```

<210> 360
<211> 198
<212> PRT
<213> E. Coli

<400> 360

```
Met Ser Lys Arg Arg Tyr Leu Thr Gly Lys Glu Val Gln Ala Met Met
 1               5                  10                  15
```

```
Gln Ala Val Cys Tyr Gly Ala Thr Gly Ala Arg Asp Tyr Cys Leu Ile
            20                  25                  30
Leu Leu Ala Tyr Arg His Gly Met Arg Ile Ser Glu Leu Leu Asp Leu
        35                  40                  45
His Tyr Gln Asp Leu Asp Leu Asn Glu Gly Arg Ile Asn Ile Arg Arg
    50                  55                  60
Leu Lys Asn Gly Phe Ser Thr Val His Pro Leu Arg Phe Asp Glu Arg
65                  70                  75                  80
Glu Ala Val Glu Arg Trp Thr Gln Glu Arg Ala Asn Trp Lys Gly Ala
                85                  90                  95
Asp Arg Thr Asp Ala Ile Phe Ile Ser Arg Arg Gly Ser Arg Leu Ser
            100                 105                 110
Arg Gln Gln Ala Tyr Arg Ile Ile Arg Asp Ala Gly Ile Glu Ala Gly
        115                 120                 125
Thr Val Thr Gln Thr His Pro His Met Leu Arg His Ala Cys Gly Tyr
    130                 135                 140
Glu Leu Ala Glu Arg Gly Ala Asp Thr Arg Leu Ile Gln Asp Tyr Leu
145                 150                 155                 160
Gly His Arg Asn Ile Arg His Thr Val Arg Tyr Thr Ala Ser Asn Ala
                165                 170                 175
Ala Arg Phe Ala Gly Leu Trp Glu Arg Asn Asn Leu Ile Asn Glu Lys
            180                 185                 190
Leu Lys Arg Glu Glu Val
        195
```

<210> 361
<211> 182
<212> PRT
<213> E. Coli

<400> 361

```
Met Lys Ile Lys Thr Leu Ala Ile Val Val Leu Ser Ala Leu Ser Leu
 1               5                  10                  15
Ser Ser Thr Ala Ala Leu Ala Ala Ala Thr Thr Val Asn Gly Gly Thr
            20                  25                  30
Val His Phe Lys Gly Glu Val Val Asn Ala Ala Cys Ala Val Asp Ala
        35                  40                  45
Gly Ser Val Asp Gln Thr Val Gln Leu Gly Gln Val Arg Thr Ala Ser
    50                  55                  60
Leu Ala Gln Glu Gly Ala Thr Ser Ser Ala Val Gly Phe Asn Ile Gln
65                  70                  75                  80
Leu Asn Asp Cys Asp Thr Asn Val Ala Ser Lys Ala Ala Val Ala Phe
                85                  90                  95
Leu Gly Thr Ala Ile Asp Ala Gly His Thr Asn Val Leu Ala Leu Gln
            100                 105                 110
Ser Ser Ala Ala Gly Ser Ala Thr Asn Val Gly Val Gln Ile Leu Asp
        115                 120                 125
Arg Thr Gly Ala Ala Leu Thr Leu Asp Gly Ala Thr Phe Ser Ser Glu
    130                 135                 140
Thr Thr Leu Asn Asn Gly Thr Asn Thr Ile Pro Phe Gln Ala Arg Tyr
145                 150                 155                 160
Phe Ala Thr Gly Ala Ala Thr Pro Gly Ala Ala Asn Ala Asp Ala Thr
                165                 170                 175
Phe Lys Val Gln Tyr Gln
            180
```

<210> 362
<211> 215
<212> PRT
<213> E. Coli

<400> 362

```
Met Leu Leu Met Arg Met Arg Pro Ser Arg Phe Ser Ile Asn Asn Leu
 1               5                  10                  15
Pro Arg Phe Arg Asp Val Ile Thr Gly Arg Asp Ala His Pro Cys Ala
            20                  25                  30
Ile Lys Ile Thr Met Lys Arg Lys Arg Leu Phe Leu Leu Ala Ser Leu
        35                  40                  45
Leu Pro Met Phe Ala Leu Ala Gly Asn Lys Trp Asn Thr Thr Leu Pro
    50                  55                  60
Gly Gly Asn Met Gln Phe Gln Gly Val Ile Ile Ala Glu Thr Cys Arg
65                  70                  75                  80
Ile Glu Ala Gly Asp Lys Gln Met Thr Val Asn Met Gly Gln Ile Ser
                85                  90                  95
Ser Asn Arg Phe His Ala Val Gly Glu Asp Ser Ala Pro Val Pro Phe
            100                 105                 110
Val Ile His Leu Arg Glu Cys Ser Thr Val Val Ser Glu Arg Val Gly
        115                 120                 125
Val Ala Phe His Gly Val Ala Asp Gly Lys Asn Pro Asp Val Leu Ser
    130                 135                 140
Val Gly Glu Gly Pro Gly Ile Ala Thr Asn Ile Gly Val Ala Leu Phe
145                 150                 155                 160
Asp Asp Glu Gly Asn Leu Val Pro Ile Asn Arg Pro Pro Ala Asn Trp
                165                 170                 175
Lys Arg Leu Tyr Ser Gly Ser Thr Ser Leu His Phe Ile Ala Lys Tyr
            180                 185                 190
Arg Ala Thr Gly Arg Arg Val Thr Gly Gly Ile Ala Asn Ala Gln Ala
        195                 200                 205
Trp Phe Ser Leu Thr Tyr Gln
    210                 215
```

<210> 363
<211> 241
<212> PRT
<213> E. Coli

<400> 363

```
Met Ser Asn Lys Asn Val Asn Val Arg Lys Ser Gln Glu Ile Thr Phe
 1               5                  10                  15
Cys Leu Leu Ala Gly Ile Leu Met Phe Met Ala Met Met Val Ala Gly
            20                  25                  30
Arg Ala Glu Ala Gly Val Ala Leu Gly Ala Thr Arg Val Ile Tyr Pro
        35                  40                  45
Ala Gly Gln Lys Gln Glu Gln Leu Ala Val Thr Asn Asn Asp Glu Asn
    50                  55                  60
Ser Thr Tyr Leu Ile Gln Ser Trp Val Glu Asn Ala Asp Gly Val Lys
65                  70                  75                  80
Asp Gly Arg Phe Ile Val Thr Pro Pro Leu Phe Ala Met Lys Gly Lys
                85                  90                  95
```

```
Lys Glu Asn Thr Leu Arg Ile Leu Asp Ala Thr Asn Asn Gln Leu Pro
            100                 105                 110
Gln Asp Arg Glu Ser Leu Phe Trp Met Asn Val Lys Ala Ile Pro Ser
        115                 120                 125
Met Asp Lys Ser Lys Leu Thr Glu Asn Thr Leu Gln Leu Ala Ile Ile
    130                 135                 140
Ser Arg Ile Lys Leu Tyr Tyr Arg Pro Ala Lys Leu Ala Leu Pro Pro
145                 150                 155                 160
Asp Gln Ala Ala Glu Lys Leu Arg Phe Arg Arg Ser Ala Asn Ser Leu
                165                 170                 175
Thr Leu Ile Asn Pro Thr Pro Tyr Tyr Leu Thr Val Thr Glu Leu Asn
            180                 185                 190
Ala Gly Thr Arg Val Leu Glu Asn Ala Leu Val Pro Pro Met Gly Glu
        195                 200                 205
Ser Thr Val Lys Leu Pro Ser Asp Ala Gly Ser Asn Ile Thr Tyr Arg
    210                 215                 220
Thr Ile Asn Asp Tyr Gly Ala Leu Thr Pro Lys Met Thr Gly Val Met
225                 230                 235                 240
Glu
```

<210> 364
<211> 878
<212> PRT
<213> E. Coli

<400> 364

```
Met Ser Tyr Leu Asn Leu Arg Leu Tyr Gln Arg Asn Thr Gln Cys Leu
 1               5                  10                  15
His Ile Arg Lys His Arg Leu Ala Gly Phe Phe Val Arg Leu Val Val
            20                  25                  30
Ala Cys Ala Phe Ala Ala Gln Ala Pro Leu Ser Ser Ala Asp Leu Tyr
        35                  40                  45
Phe Asn Pro Arg Phe Leu Ala Asp Asp Pro Gln Ala Val Ala Asp Leu
    50                  55                  60
Ser Arg Phe Glu Asn Gly Gln Glu Leu Pro Pro Gly Thr Tyr Arg Val
65                  70                  75                  80
Asp Ile Tyr Leu Asn Asn Gly Tyr Met Ala Thr Arg Asp Val Thr Phe
                85                  90                  95
Asn Thr Gly Asp Ser Glu Gln Gly Ile Val Pro Cys Leu Thr Arg Ala
            100                 105                 110
Gln Leu Ala Ser Met Gly Leu Asn Thr Ala Ser Val Ala Gly Met Asn
        115                 120                 125
Leu Leu Ala Asp Asp Ala Cys Val Pro Leu Thr Thr Met Val Gln Asp
    130                 135                 140
Ala Thr Ala His Leu Asp Val Gly Gln Gln Arg Leu Asn Leu Thr Ile
145                 150                 155                 160
Pro Gln Ala Phe Met Ser Asn Arg Ala Arg Gly Tyr Ile Pro Pro Glu
                165                 170                 175
Leu Trp Asp Pro Gly Ile Asn Ala Gly Leu Leu Asn Tyr Asn Phe Ser
            180                 185                 190
Gly Asn Ser Val Gln Asn Arg Ile Gly Gly Asn Ser His Tyr Ala Tyr
        195                 200                 205
Leu Asn Leu Gln Ser Gly Leu Asn Ile Gly Ala Trp Arg Leu Arg Asp
    210                 215                 220
Asn Thr Thr Trp Ser Tyr Asn Ser Ser Asp Arg Ser Ser Gly Ser Lys
```

```
225                 230                 235                 240
Asn Lys Trp Gln His Ile Asn Thr Trp Leu Glu Arg Asp Ile Ile Pro
                245                 250                 255
Leu Arg Ser Arg Leu Thr Leu Gly Asp Gly Tyr Thr Gln Gly Asp Ile
            260                 265                 270
Phe Asp Gly Ile Asn Phe Arg Gly Ala Gln Leu Ala Ser Asp Asp Asn
        275                 280                 285
Met Leu Pro Asp Ser Gln Arg Gly Phe Ala Pro Val Ile His Gly Ile
    290                 295                 300
Ala Arg Gly Thr Ala Gln Val Thr Ile Lys Gln Asn Gly Tyr Asp Ile
305                 310                 315                 320
Tyr Asn Ser Thr Val Pro Pro Gly Pro Phe Thr Ile Asn Asp Ile Tyr
                325                 330                 335
Ala Ala Gly Asn Ser Gly Asp Leu Gln Val Thr Ile Lys Glu Ala Asp
            340                 345                 350
Gly Ser Thr Gln Ile Phe Thr Val Pro Tyr Ser Ser Val Pro Leu Leu
        355                 360                 365
Gln Arg Glu Gly His Thr Arg Tyr Ser Ile Thr Ala Gly Glu Tyr Arg
    370                 375                 380
Ser Gly Asn Ala Gln Gln Glu Lys Thr Arg Phe Phe Gln Ser Thr Leu
385                 390                 395                 400
Leu His Gly Leu Pro Ala Gly Trp Thr Ile Tyr Gly Gly Thr Gln Leu
                405                 410                 415
Ala Asp Arg Tyr Arg Ala Phe Asn Phe Gly Ile Gly Lys Asn Met Gly
            420                 425                 430
Ala Leu Gly Ala Leu Ser Val Asp Met Thr Gln Ala Asn Ser Thr Leu
        435                 440                 445
Pro Asp Asp Ser Gln His Asp Gly Gln Ser Val Arg Phe Leu Tyr Asn
    450                 455                 460
Lys Ser Leu Asn Glu Ser Gly Thr Asn Ile Gln Leu Val Gly Tyr Arg
465                 470                 475                 480
Tyr Ser Thr Ser Gly Tyr Phe Asn Phe Ala Asp Thr Thr Tyr Ser Arg
                485                 490                 495
Met Asn Gly Tyr Asn Ile Glu Thr Gln Asp Gly Val Ile Gln Val Lys
            500                 505                 510
Pro Lys Phe Thr Asp Tyr Tyr Asn Leu Ala Tyr Asn Lys Arg Gly Lys
        515                 520                 525
Leu Gln Leu Thr Val Thr Gln Gln Leu Gly Arg Thr Ser Thr Leu Tyr
    530                 535                 540
Leu Ser Gly Ser His Gln Thr Tyr Trp Gly Thr Ser Asn Val Asp Glu
545                 550                 555                 560
Gln Phe Gln Ala Gly Leu Asn Thr Ala Phe Glu Asp Ile Asn Trp Thr
                565                 570                 575
Leu Ser Tyr Ser Leu Thr Lys Asn Ala Trp Gln Lys Gly Arg Asp Gln
            580                 585                 590
Met Leu Ala Leu Asn Val Asn Ile Pro Phe Ser His Trp Leu Arg Ser
        595                 600                 605
Asp Ser Lys Ser Gln Trp Arg His Ala Ser Ala Ser Tyr Ser Met Ser
    610                 615                 620
His Asp Leu Asn Gly Arg Met Thr Asn Leu Ala Gly Val Tyr Gly Thr
625                 630                 635                 640
Leu Leu Glu Asp Asn Asn Leu Ser Tyr Ser Val Gln Thr Gly Tyr Ala
                645                 650                 655
Gly Gly Gly Asp Gly Asn Ser Gly Ser Thr Gly Tyr Ala Thr Leu Asn
            660                 665                 670
Tyr Arg Gly Gly Tyr Gly Asn Ala Asn Ile Gly Tyr Ser His Ser Asp
        675                 680                 685
```

```
Asp Ile Lys Gln Leu Tyr Tyr Gly Val Ser Gly Gly Val Leu Ala His
    690                 695                 700
Ala Asn Gly Val Thr Leu Gly Gln Pro Leu Asn Asp Thr Val Val Leu
705                 710                 715                 720
Val Lys Ala Pro Gly Ala Lys Asp Ala Lys Val Glu Asn Gln Thr Gly
                725                 730                 735
Val Arg Thr Asp Trp Arg Gly Tyr Ala Val Leu Pro Tyr Ala Thr Glu
            740                 745                 750
Tyr Arg Glu Asn Arg Val Ala Leu Asp Thr Asn Thr Leu Ala Asp Asn
        755                 760                 765
Val Asp Leu Asp Asn Ala Val Ala Asn Val Val Pro Thr Arg Gly Ala
    770                 775                 780
Ile Val Arg Ala Glu Phe Lys Ala Arg Val Gly Ile Lys Leu Leu Met
785                 790                 795                 800
Thr Leu Thr His Asn Asn Lys Pro Leu Pro Phe Gly Ala Met Val Thr
                805                 810                 815
Ser Glu Ser Ser Gln Ser Ser Gly Ile Val Ala Asp Asn Gly Gln Val
            820                 825                 830
Tyr Leu Ser Gly Met Pro Leu Ala Gly Lys Val Gln Val Lys Trp Gly
        835                 840                 845
Glu Glu Glu Asn Ala His Cys Val Ala Asn Tyr Gln Leu Pro Pro Glu
    850                 855                 860
Ser Gln Gln Gln Leu Leu Thr Gln Leu Ser Ala Glu Cys Arg
865                 870                 875
```

<210> 365
<211> 176
<212> PRT
<213> E. Coli

<400> 365

```
Met Arg Asn Lys Pro Phe Tyr Leu Leu Cys Ala Phe Leu Trp Leu Ala
 1               5                  10                  15
Val Ser His Ala Leu Ala Ala Asp Ser Thr Ile Thr Ile Arg Gly Tyr
            20                  25                  30
Val Arg Asp Asn Gly Cys Ser Val Ala Ala Glu Ser Thr Asn Phe Thr
        35                  40                  45
Val Asp Leu Met Glu Asn Ala Ala Lys Gln Phe Asn Asn Ile Gly Ala
    50                  55                  60
Thr Thr Pro Val Val Pro Phe Arg Ile Leu Leu Ser Pro Cys Gly Asn
65                  70                  75                  80
Ala Val Ser Ala Val Lys Val Gly Phe Thr Gly Val Ala Asp Ser His
                85                  90                  95
Asn Ala Asn Leu Leu Ala Leu Glu Asn Thr Val Ser Ala Ala Ser Gly
            100                 105                 110
Leu Gly Ile Gln Leu Leu Asn Glu Gln Gln Asn Gln Ile Pro Leu Asn
        115                 120                 125
Ala Pro Ser Ser Ala Leu Ser Trp Thr Thr Leu Thr Pro Gly Lys Pro
    130                 135                 140
Asn Thr Leu Asn Phe Tyr Ala Arg Leu Met Ala Thr Gln Val Pro Val
145                 150                 155                 160
Thr Ala Gly His Ile Asn Ala Thr Ala Thr Phe Thr Leu Glu Tyr Gln
                165                 170                 175
```

<210> 366
<211> 167
<212> PRT
<213> E. Coli

<400> 366

```
Met Lys Trp Cys Lys Arg Gly Tyr Val Leu Ala Ala Ile Leu Ala Leu
 1               5                  10                  15
Ala Ser Ala Thr Ile Gln Ala Ala Asp Val Thr Ile Thr Val Asn Gly
            20                  25                  30
Lys Val Val Ala Lys Pro Cys Thr Val Ser Thr Thr Asn Ala Thr Val
        35                  40                  45
Asp Leu Gly Asp Leu Tyr Ser Phe Ser Leu Met Ser Ala Gly Ala Ala
    50                  55                  60
Ser Ala Trp His Asp Val Ala Leu Glu Leu Thr Asn Cys Pro Val Gly
65                  70                  75                  80
Thr Ser Arg Val Thr Ala Ser Phe Ser Gly Ala Ala Asp Ser Thr Gly
                85                  90                  95
Tyr Tyr Lys Asn Gln Gly Thr Ala Gln Asn Ile Gln Leu Glu Leu Gln
            100                 105                 110
Asp Asp Ser Gly Asn Thr Leu Asn Thr Gly Ala Thr Lys Thr Val Gln
        115                 120                 125
Val Asp Asp Ser Ser Gln Ser Ala His Phe Pro Leu Gln Val Arg Ala
    130                 135                 140
Leu Thr Val Asn Gly Gly Ala Thr Gln Gly Thr Ile Gln Ala Val Ile
145                 150                 155                 160
Ser Ile Thr Tyr Thr Tyr Ser
                165
```

<210> 367
<211> 300
<212> PRT
<213> E. Coli

<400> 367

```
Met Lys Arg Val Ile Thr Leu Phe Ala Val Leu Leu Met Gly Trp Ser
 1               5                  10                  15
Val Asn Ala Trp Ser Phe Ala Cys Lys Thr Ala Asn Gly Thr Ala Ile
            20                  25                  30
Pro Ile Gly Gly Gly Ser Ala Asn Val Tyr Val Asn Leu Ala Pro Val
        35                  40                  45
Val Asn Val Gly Gln Asn Leu Val Val Asp Leu Ser Thr Gln Ile Phe
    50                  55                  60
Cys His Asn Asp Tyr Pro Glu Thr Ile Thr Asp Tyr Val Thr Leu Gln
65                  70                  75                  80
Arg Gly Ser Ala Tyr Gly Gly Val Leu Ser Asn Phe Ser Gly Thr Val
                85                  90                  95
Lys Tyr Ser Gly Ser Ser Tyr Pro Phe Pro Thr Thr Ser Glu Thr Pro
            100                 105                 110
Arg Val Val Tyr Asn Ser Arg Thr Asp Lys Pro Trp Pro Val Ala Leu
        115                 120                 125
Tyr Leu Thr Pro Val Ser Ser Ala Gly Gly Val Ala Ile Lys Ala Gly
    130                 135                 140
Ser Leu Ile Ala Val Leu Ile Leu Arg Gln Thr Asn Asn Tyr Asn Ser
145                 150                 155                 160
```

```
Asp Asp Phe Gln Phe Val Trp Asn Ile Tyr Ala Asn Asn Asp Val Val
                165                 170                 175
Val Pro Thr Gly Gly Cys Asp Val Ser Ala Arg Asp Val Thr Val Thr
            180                 185                 190
Leu Pro Asp Tyr Pro Gly Ser Val Pro Ile Pro Leu Thr Val Tyr Cys
        195                 200                 205
Ala Lys Ser Gln Asn Leu Gly Tyr Tyr Leu Ser Gly Thr Thr Ala Asp
    210                 215                 220
Ala Gly Asn Ser Ile Phe Thr Asn Thr Ala Ser Phe Ser Pro Ala Gln
225                 230                 235                 240
Gly Val Gly Val Gln Leu Thr Arg Asn Gly Thr Ile Ile Pro Ala Asn
                245                 250                 255
Asn Thr Val Ser Leu Gly Ala Val Gly Thr Ser Ala Val Ser Leu Gly
            260                 265                 270
Leu Thr Ala Asn Tyr Ala Arg Thr Gly Gly Gln Val Thr Ala Gly Asn
        275                 280                 285
Val Gln Ser Ile Ile Gly Val Thr Phe Val Tyr Gln
    290                 295                 300
```

<210> 368
<211> 521
<212> PRT
<213> E. Coli

<400> 368

```
Met Leu Ser Lys Leu Pro Arg Arg Leu Arg Ser Phe Gln Thr Tyr Cys
 1               5                  10                  15
Thr Ile Arg Val His Arg Gly Glu Asp Met Lys Ser Met Asp Lys Leu
            20                  25                  30
Thr Thr Gly Val Ala Tyr Gly Thr Ser Ala Gly Asn Ala Gly Phe Trp
        35                  40                  45
Ala Leu Gln Leu Leu Asp Lys Val Thr Pro Ser Gln Trp Ala Ala Ile
    50                  55                  60
Gly Val Leu Gly Ser Leu Val Phe Gly Leu Leu Thr Tyr Leu Thr Asn
65                  70                  75                  80
Leu Tyr Phe Lys Ile Lys Glu Asp Arg Arg Lys Ala Ala Arg Gly Glu
                85                  90                  95
Ser Asn Asp Ser Arg Leu Thr Gly Cys Glu Arg Ser Pro Phe Glu Ser
            100                 105                 110
Tyr Gly Asn Cys Ser Leu Thr Gly Gln Arg Thr Leu Arg Asn Phe Pro
        115                 120                 125
Gly Cys Arg His Gly Pro Cys Arg Ser Cys Ala Gly Val Leu Gly Ser
    130                 135                 140
Ser Gln Lys Glu Arg Pro Ala Ser Leu Pro Gly Ser Ser Arg Lys Ile
145                 150                 155                 160
Val Arg Lys Ser Val Leu Ser Ala Ala Ser Val Leu Leu Asp Lys Ser
                165                 170                 175
Cys Gln Ala Arg Ala Ser Ser Ser Ile Ser Met Asn Thr Lys Ile Arg
            180                 185                 190
Tyr Gly Leu Ser Ala Ala Val Leu Ala Leu Ile Gly Ala Gly Ala Ser
        195                 200                 205
Ala Pro Gln Ile Leu Asp Gln Phe Leu Asp Glu Lys Glu Gly Asn His
    210                 215                 220
Thr Met Ala Tyr Arg Asp Gly Ser Gly Ile Trp Thr Ile Cys Arg Gly
225                 230                 235                 240
```

```
Ala Thr Val Val Asp Gly Lys Thr Val Phe Pro Asn Met Lys Leu Ser
                245                 250                 255
Lys Glu Lys Cys Asp Gln Val Asn Ala Ile Glu Arg Asp Lys Ala Leu
            260                 265                 270
Ala Trp Val Glu Arg Asn Ile Lys Val Pro Leu Thr Glu Pro Gln Lys
        275                 280                 285
Ala Gly Ile Ala Ser Phe Cys Pro Tyr Asn Ile Gly Pro Gly Lys Cys
    290                 295                 300
Phe Pro Ser Thr Phe Tyr Lys Arg Leu Asn Ala Gly Asp Arg Lys Gly
305                 310                 315                 320
Ala Cys Glu Ala Ile Arg Trp Trp Ile Lys Asp Gly Gly Arg Asp Cys
                325                 330                 335
Arg Ile Arg Ser Asn Asn Cys Tyr Gly Gln Val Ile Arg Arg Asp Gln
            340                 345                 350
Glu Ser Ala Leu Thr Cys Trp Gly Ile Glu Gln Ile Arg Tyr Ser Trp
        355                 360                 365
Phe Phe Ser Cys Cys Gln Asp Leu Ser Ser Glu Met Ser Gly Ala Thr
    370                 375                 380
Glu Asp Gly Lys Lys Asn Gly Arg Asn Val Met Leu Pro His Tyr His
385                 390                 395                 400
Lys Arg Met Leu Asn Leu Leu Leu Glu Leu Asn Arg Gly Glu Leu Pro
                405                 410                 415
Val Met Arg Leu Leu Lys Met Arg Asn Arg Asn Leu Leu Lys Phe Leu
            420                 425                 430
Pro Gly Leu Leu Ile Cys Leu Ile Val Leu Thr Ser Cys Val Pro Lys
        435                 440                 445
Gln Lys Asn Met Pro Tyr Ala Leu Thr Gln Arg Ser Ile Pro Gln Ile
    450                 455                 460
Leu Pro Leu Pro Ser Glu Ala Lys Gln Pro Lys Pro Pro Lys Glu Cys
465                 470                 475                 480
Ser Pro Thr Cys Ser Glu Ile Leu Gln Gln Lys Leu Ser Phe Met Leu
                485                 490                 495
Lys Leu Leu Thr Asn Ala Thr Ser Gln Glu Leu Val Asn Arg Ser Met
            500                 505                 510
Asn Leu Glu Ile Lys Ser Ile Lys Cys
        515                 520
```

<210> 369
<211> 177
<212> PRT
<213> E. Coli

<400> 369

```
Met Asn Thr Lys Ile Arg Tyr Gly Leu Ser Ala Ala Val Leu Ala Leu
 1               5                  10                  15
Ile Gly Ala Gly Ala Ser Ala Pro Gln Ile Leu Asp Gln Phe Leu Asp
            20                  25                  30
Glu Lys Glu Gly Asn His Thr Met Ala Tyr Arg Asp Gly Ser Gly Ile
        35                  40                  45
Trp Thr Ile Cys Arg Gly Ala Thr Val Val Asp Gly Lys Thr Val Phe
    50                  55                  60
Pro Asn Met Lys Leu Ser Lys Glu Lys Cys Asp Gln Val Asn Ala Ile
65                  70                  75                  80
Glu Arg Asp Lys Ala Leu Ala Trp Val Glu Arg Asn Ile Lys Val Pro
                85                  90                  95
```

```
Leu Thr Glu Pro Gln Lys Ala Gly Ile Ala Ser Phe Cys Pro Tyr Asn
            100                 105                 110
Ile Gly Pro Gly Lys Cys Phe Pro Ser Thr Phe Tyr Lys Arg Leu Asn
        115                 120                 125
Ala Gly Asp Arg Lys Gly Ala Cys Glu Ala Ile Arg Trp Trp Ile Lys
    130                 135                 140
Asp Gly Gly Arg Asp Cys Arg Ile Arg Ser Asn Asn Cys Tyr Gly Gln
145                 150                 155                 160
Val Ile Arg Arg Asp Gln Glu Ser Ala Leu Thr Cys Trp Gly Ile Glu
                165                 170                 175
Gln
```

<210> 370
<211> 103
<212> PRT
<213> E. Coli

<400> 370

```
Met Thr Gln Asp Tyr Glu Leu Val Val Lys Gly Val Arg Asn Phe Glu
 1               5                  10                  15
Asn Lys Val Thr Val Thr Val Ala Leu Gln Asp Lys Glu Arg Phe Asp
            20                  25                  30
Gly Glu Ile Phe Asp Leu Asp Val Ala Met Asp Arg Val Glu Gly Ala
        35                  40                  45
Ala Leu Glu Phe Tyr Glu Ala Ala Ala Arg Arg Ser Val Arg Gln Val
    50                  55                  60
Phe Leu Glu Val Ala Glu Lys Leu Ser Glu Lys Val Glu Ser Tyr Leu
65                  70                  75                  80
Gln His Gln Tyr Ser Phe Lys Ile Glu Asn Pro Ala Asn Lys His Glu
                85                  90                  95
Arg Pro His His Lys Tyr Leu
            100
```

<210> 371
<211> 96
<212> PRT
<213> E. Coli

<400> 371

```
Met Leu Ser Lys Leu Pro Arg Arg Leu Arg Ser Phe Gln Thr Tyr Cys
 1               5                  10                  15
Thr Ile Arg Val His Arg Gly Glu Asp Met Lys Ser Met Asp Lys Leu
            20                  25                  30
Thr Thr Gly Val Ala Tyr Gly Thr Ser Ala Gly Asn Ala Gly Phe Trp
        35                  40                  45
Ala Leu Gln Leu Leu Asp Lys Val Thr Pro Ser Gln Trp Ala Ala Ile
    50                  55                  60
Gly Val Leu Gly Ser Leu Val Phe Gly Leu Leu Thr Tyr Leu Thr Asn
65                  70                  75                  80
Leu Tyr Phe Lys Ile Lys Glu Asp Arg Arg Lys Ala Ala Arg Gly Glu
                85                  90                  95
```

<210> 372
<211> 71
<212> PRT
<213> E. Coli

<400> 372
Met Ser Asn Lys Met Thr Gly Leu Val Lys Trp Phe Asn Ala Asp Lys
1 5 10 15
Gly Phe Gly Phe Ile Ser Pro Val Asp Gly Ser Lys Asp Val Phe Val
20 25 30
His Phe Ser Ala Ile Gln Asn Asp Asn Tyr Arg Thr Leu Phe Glu Gly
35 40 45
Gln Lys Val Thr Phe Ser Ile Glu Ser Gly Ala Lys Gly Pro Ala Ala
50 55 60
Ala Asn Val Ile Ile Thr Asp
65 70

<210> 373
<211> 338
<212> PRT
<213> E. Coli

<400> 373
Met Phe Val Ile Trp Ser His Arg Thr Gly Phe Ile Met Ser His Gln
1 5 10 15
Leu Thr Phe Ala Asp Ser Glu Phe Ser Ser Lys Arg Arg Gln Thr Arg
20 25 30
Lys Glu Ile Phe Leu Ser Arg Met Glu Gln Ile Leu Pro Trp Gln Asn
35 40 45
Met Val Glu Val Ile Glu Pro Phe Tyr Pro Lys Ala Gly Asn Gly Arg
50 55 60
Arg Pro Tyr Pro Leu Glu Thr Met Leu Arg Ile His Cys Met Gln His
65 70 75 80
Trp Tyr Asn Leu Ser Asp Gly Ala Met Glu Asp Ala Leu Tyr Glu Ile
85 90 95
Ala Ser Met Arg Leu Phe Ala Arg Leu Ser Leu Asp Ser Ala Leu Pro
100 105 110
Asp Arg Thr Thr Ile Met Asn Phe Arg His Leu Leu Glu Gln His Gln
115 120 125
Leu Ala Arg Gln Leu Phe Lys Thr Ile Asn Arg Trp Leu Ala Glu Ala
130 135 140
Gly Val Met Met Thr Gln Gly Thr Leu Val Asp Ala Thr Ile Ile Glu
145 150 155 160
Ala Pro Ser Ser Thr Lys Asn Lys Glu Gln Gln Arg Asp Pro Glu Met
165 170 175
His Gln Thr Lys Lys Gly Asn Gln Trp His Phe Gly Met Lys Ala His
180 185 190
Ile Gly Val Asp Ala Lys Ser Gly Leu Thr His Ser Leu Val Thr Thr
195 200 205
Ala Ala Asn Glu His Asp Leu Asn Gln Leu Gly Asn Leu Leu His Gly
210 215 220
Glu Glu Gln Phe Val Ser Ala Asp Ala Gly Tyr Gln Gly Ala Pro Gln
225 230 235 240
Arg Glu Glu Leu Ala Glu Val Asp Val Asp Trp Leu Ile Ala Glu Arg

```
                245                 250                 255
Pro Gly Lys Val Arg Thr Leu Lys Gln His Pro Arg Lys Asn Lys Thr
            260                 265                 270
Ala Ile Asn Ile Glu Tyr Met Lys Ala Ser Ile Arg Ala Arg Val Glu
        275                 280                 285
His Pro Phe Arg Ile Ile Lys Arg Gln Phe Gly Phe Val Lys Ala Arg
    290                 295                 300
Tyr Lys Gly Leu Leu Lys Asn Asp Asn Gln Leu Ala Met Leu Phe Thr
305                 310                 315                 320
Leu Ala Asn Leu Phe Arg Ala Asp Gln Met Ile Arg Gln Trp Glu Arg
                325                 330                 335
Ser His
```

<210> 374
<211> 157
<212> PRT
<213> E. Coli

<400> 374

```
Met Val Tyr Ile Ile Ile Val Ser His Gly His Glu Asp Tyr Ile Lys
 1               5                  10                  15
Lys Leu Leu Glu Asn Leu Asn Ala Asp Asp Glu His Tyr Lys Ile Ile
            20                  25                  30
Val Arg Asp Asn Lys Asp Ser Leu Leu Leu Lys Gln Ile Cys Gln His
        35                  40                  45
Tyr Ala Gly Leu Asp Tyr Ile Ser Gly Gly Val Tyr Gly Phe Gly His
    50                  55                  60
Asn Asn Asn Ile Ala Val Ala Tyr Val Lys Glu Lys Tyr Arg Pro Ala
65                  70                  75                  80
Asp Asp Asp Tyr Ile Leu Phe Leu Asn Pro Asp Ile Ile Met Lys His
                85                  90                  95
Asp Asp Leu Leu Thr Tyr Ile Lys Tyr Val Glu Ser Lys Arg Tyr Ala
            100                 105                 110
Phe Ser Thr Leu Cys Leu Phe Arg Asp Glu Ala Lys Ser Leu His Asp
        115                 120                 125
Tyr Ser Val Arg Lys Phe Pro Val Leu Ser Asp Phe Ile Val Ser Phe
    130                 135                 140
Met Leu Gly Ile Lys Glu Gly Ala Asn Lys Ser Leu Ile
145                 150                 155
```

<210> 375
<211> 372
<212> PRT
<213> E. Coli

<400> 375

```
Met Gly Lys Ser Ile Val Val Val Ser Ala Val Asn Phe Thr Thr Gly
 1               5                  10                  15
Gly Pro Phe Thr Ile Leu Lys Lys Phe Leu Ala Ala Thr Asn Asn Lys
            20                  25                  30
Glu Asn Val Ser Phe Ile Ala Leu Val His Ser Ala Lys Glu Leu Lys
        35                  40                  45
Glu Ser Tyr Pro Trp Val Lys Phe Ile Glu Phe Pro Glu Val Lys Gly
```

```
    50                  55                  60
Ser Trp Leu Lys Arg Leu His Phe Glu Tyr Val Val Cys Lys Lys Leu
65                  70                  75                  80
Ser Lys Glu Leu Asn Ala Thr His Trp Ile Cys Leu His Asp Ile Thr
                85                  90                  95
Ala Asn Val Val Thr Lys Lys Arg Tyr Val Tyr Cys His Asn Pro Ala
            100                 105                 110
Pro Phe Tyr Lys Gly Ile Leu Phe Arg Glu Ile Leu Met Glu Pro Ser
        115                 120                 125
Phe Phe Leu Phe Lys Met Leu Tyr Gly Leu Ile Tyr Lys Ile Asn Ile
    130                 135                 140
Lys Lys Asn Thr Ala Val Phe Val Gln Gln Phe Trp Met Lys Glu Lys
145                 150                 155                 160
Phe Ile Lys Lys Tyr Ser Ile Asn Asn Ile Ile Val Ser Arg Pro Glu
                165                 170                 175
Ile Lys Leu Ser Asp Lys Ser Gln Leu Thr Asp Asp Asp Ser Gln Phe
            180                 185                 190
Lys Asn Asn Pro Ser Glu Leu Thr Ile Phe Tyr Pro Ala Val Pro Arg
        195                 200                 205
Val Phe Lys Asn Tyr Glu Leu Ile Ile Ser Ala Ala Arg Lys Leu Lys
    210                 215                 220
Glu Gln Ser Asn Ile Lys Phe Leu Leu Thr Ile Ser Gly Thr Glu Asn
225                 230                 235                 240
Ala Tyr Ala Lys Tyr Ile Ile Ser Leu Ala Glu Gly Leu Asp Asn Val
                245                 250                 255
His Phe Leu Gly Tyr Leu Asp Lys Glu Lys Ile Asp His Cys Tyr Asn
            260                 265                 270
Ile Ser Asp Ile Val Cys Phe Pro Ser Arg Leu Glu Thr Trp Gly Leu
        275                 280                 285
Pro Leu Ser Glu Ala Lys Glu Arg Gly Lys Trp Val Leu Ala Ser Asp
    290                 295                 300
Phe Pro Phe Thr Arg Glu Thr Leu Gly Ser Tyr Glu Lys Lys Ala Phe
305                 310                 315                 320
Phe Asp Ser Asn Asn Asp Asp Met Leu Val Lys Leu Ile Ile Asp Phe
                325                 330                 335
Lys Lys Gly Asn Leu Lys Lys Asp Ile Ser Asp Ala Asn Phe Ile Tyr
            340                 345                 350
Arg Asn Glu Asn Val Leu Val Gly Phe Asp Glu Leu Val Asn Phe Ile
        355                 360                 365
Thr Glu Glu His
    370
```

<210> 376
<211> 196
<212> PRT
<213> E. Coli

<400> 376

```
Met Ile Leu Lys Leu Ala Lys Arg Tyr Gly Leu Cys Gly Phe Ile Arg
 1               5                  10                  15
Leu Val Arg Asp Val Leu Leu Thr Arg Val Phe Tyr Arg Asn Cys Arg
            20                  25                  30
Ile Ile Arg Phe Pro Cys Tyr Ile Arg Asn Asp Gly Ser Ile Asn Phe
        35                  40                  45
Gly Glu Asn Phe Thr Ser Gly Val Gly Leu Arg Leu Asp Ala Phe Gly
    50                  55                  60
```

```
Arg Gly Val Ile Phe Phe Ser Asp Asn Val Gln Val Asn Asp Tyr Val
65                  70                  75                  80
His Ile Ala Ser Ile Glu Ser Val Thr Ile Gly Arg Asp Thr Leu Ile
                85                  90                  95
Ala Ser Lys Val Phe Ile Thr Asp His Asn His Gly Ser Phe Lys His
            100                 105                 110
Ser Asp Pro Met Ser Ser Pro Asn Ile Pro Pro Asp Met Arg Thr Leu
        115                 120                 125
Glu Ser Ser Ala Val Val Ile Gly Gln Arg Val Trp Leu Gly Glu Asn
    130                 135                 140
Val Thr Val Leu Pro Gly Thr Ile Ile Gly Asn Gly Val Val Val Gly
145                 150                 155                 160
Ala Asn Ser Val Val Arg Gly Ser Ile Pro Glu Asn Thr Val Ile Ala
                165                 170                 175
Gly Val Pro Ala Lys Ile Ile Lys Lys Tyr Asn His Glu Thr Lys Leu
            180                 185                 190
Trp Glu Lys Ala
        195

      <210> 377
      <211> 330
      <212> PRT
      <213> E. Coli

      <400> 377
Met Tyr Phe Leu Asn Asp Leu Asn Phe Ser Arg Arg Asp Ala Gly Phe
 1                5                  10                  15
Lys Ala Arg Lys Asp Ala Leu Asp Ile Ala Ser Asp Tyr Glu Asn Ile
            20                  25                  30
Ser Val Val Asn Ile Pro Leu Trp Gly Gly Val Val Gln Arg Ile Ile
        35                  40                  45
Ser Ser Val Lys Leu Ser Thr Phe Leu Cys Gly Leu Glu Asn Lys Asp
    50                  55                  60
Val Leu Ile Phe Asn Phe Pro Met Ala Lys Pro Phe Trp His Ile Leu
65                  70                  75                  80
Ser Phe Phe His Arg Leu Leu Lys Phe Arg Ile Val Pro Leu Ile His
                85                  90                  95
Asp Ile Asp Glu Leu Arg Gly Gly Gly Gly Ser Asp Ser Val Arg Leu
            100                 105                 110
Ala Thr Cys Asp Met Val Ile Ser His Asn Pro Gln Met Thr Lys Tyr
        115                 120                 125
Leu Ser Lys Tyr Met Ser Gln Asp Lys Ile Lys Asp Ile Lys Ile Phe
    130                 135                 140
Asp Tyr Leu Val Ser Ser Asp Val Glu His Arg Asp Val Thr Asp Lys
145                 150                 155                 160
Gln Arg Gly Val Ile Tyr Ala Gly Asn Leu Ser Arg His Lys Cys Ser
                165                 170                 175
Phe Ile Tyr Thr Glu Gly Cys Asp Phe Thr Leu Phe Gly Val Asn Tyr
            180                 185                 190
Glu Asn Lys Asp Asn Pro Lys Tyr Leu Gly Ser Phe Asp Ala Gln Ser
        195                 200                 205
Pro Glu Lys Ile Asn Leu Pro Gly Met Gln Phe Gly Leu Ile Trp Asp
    210                 215                 220
Gly Asp Ser Val Glu Thr Cys Ser Gly Ala Phe Gly Asp Tyr Leu Lys
225                 230                 235                 240
Phe Asn Asn Pro His Lys Thr Ser Leu Tyr Leu Ser Met Glu Leu Pro
                245                 250                 255
```

```
Val Phe Ile Trp Asp Lys Ala Ala Leu Ala Asp Phe Ile Val Asp Asn
            260                 265                 270
Arg Ile Gly Tyr Ala Val Gly Ser Ile Lys Glu Met Gln Glu Ile Val
        275                 280                 285
Asp Ser Met Thr Ile Glu Thr Tyr Lys Gln Ile Ser Glu Asn Thr Lys
    290                 295                 300
Ile Ile Ser Gln Lys Ile Arg Thr Gly Ser Tyr Phe Arg Asp Val Leu
305                 310                 315                 320
Glu Glu Val Ile Asp Asp Leu Lys Thr Arg
                325                 330


      <210> 378
      <211> 388
      <212> PRT
      <213> E. Coli

      <400> 378
Met Ile Tyr Leu Val Ile Ser Val Phe Leu Ile Thr Ala Phe Ile Cys
 1               5                  10                  15
Leu Tyr Leu Lys Lys Asp Ile Phe Tyr Pro Ala Val Cys Val Asn Ile
            20                  25                  30
Ile Phe Ala Leu Val Leu Leu Gly Tyr Glu Ile Thr Ser Asp Ile Tyr
        35                  40                  45
Ala Phe Gln Leu Asn Asp Ala Thr Leu Ile Phe Leu Leu Cys Asn Val
    50                  55                  60
Leu Thr Phe Thr Leu Ser Cys Leu Leu Thr Glu Ser Val Leu Asp Leu
65                  70                  75                  80
Asn Ile Arg Lys Val Asn Asn Ala Ile Tyr Ser Ile Pro Ser Lys Lys
                85                  90                  95
Val His Asn Val Gly Leu Leu Val Ile Ser Phe Ser Met Ile Tyr Ile
            100                 105                 110
Cys Met Arg Leu Ser Asn Tyr Gln Phe Gly Thr Ser Leu Leu Ser Tyr
        115                 120                 125
Met Asn Leu Ile Arg Asp Ala Asp Val Glu Asp Thr Ser Arg Asn Phe
    130                 135                 140
Ser Ala Tyr Met Gln Pro Ile Ile Leu Thr Thr Phe Ala Leu Phe Ile
145                 150                 155                 160
Trp Ser Lys Lys Phe Thr Asn Thr Lys Val Ser Lys Thr Phe Thr Leu
                165                 170                 175
Leu Val Phe Ile Val Phe Ile Phe Ala Ile Ile Leu Asn Thr Gly Lys
            180                 185                 190
Gln Ile Val Phe Met Val Ile Ile Ser Tyr Ala Phe Ile Val Gly Val
        195                 200                 205
Asn Arg Val Lys His Tyr Val Tyr Leu Ile Thr Ala Val Gly Val Leu
    210                 215                 220
Phe Ser Leu Tyr Met Leu Phe Leu Arg Gly Leu Pro Gly Gly Met Ala
225                 230                 235                 240
Tyr Tyr Leu Ser Met Tyr Leu Val Ser Pro Ile Ile Ala Phe Gln Glu
                245                 250                 255
Phe Tyr Phe Gln Gln Val Ser Asn Ser Ala Ser Ser His Val Phe Trp
            260                 265                 270
Phe Phe Glu Arg Leu Met Gly Leu Leu Thr Gly Gly Val Ser Met Ser
        275                 280                 285
Leu His Lys Glu Phe Val Trp Val Gly Leu Pro Thr Asn Val Tyr Thr
    290                 295                 300
Ala Phe Ser Asp Tyr Val Tyr Ile Ser Ala Glu Leu Ser Tyr Leu Met
```

```
305                 310                 315                 320
Met Val Ile His Gly Cys Ile Ser Gly Val Leu Trp Arg Leu Ser Arg
                325                 330                 335
Asn Tyr Ile Ser Val Lys Ile Phe Tyr Ser Tyr Phe Ile Tyr Thr Phe
            340                 345                 350
Ser Phe Ile Phe Tyr His Glu Ser Phe Met Thr Asn Ile Ser Ser Trp
        355                 360                 365
Ile Gln Ile Thr Leu Cys Ile Ile Val Phe Ser Gln Phe Leu Lys Ala
    370                 375                 380
Gln Lys Ile Lys
385
```

<210> 379
<211> 367
<212> PRT
<213> E. Coli

<400> 379

```
Met Tyr Asp Tyr Ile Ile Val Gly Ser Gly Leu Phe Gly Ala Val Cys
 1               5                  10                  15
Ala Asn Glu Leu Lys Lys Leu Asn Lys Lys Val Leu Val Ile Glu Lys
            20                  25                  30
Arg Asn His Ile Gly Gly Asn Ala Tyr Thr Glu Asp Cys Glu Gly Ile
        35                  40                  45
Gln Ile His Lys Tyr Gly Ala His Ile Phe His Thr Asn Asp Lys Tyr
    50                  55                  60
Ile Trp Asp Tyr Val Asn Asp Leu Val Glu Phe Asn Arg Phe Thr Asn
65                  70                  75                  80
Ser Pro Leu Ala Ile Tyr Lys Asp Lys Leu Phe Asn Leu Pro Phe Asn
                85                  90                  95
Met Asn Thr Phe His Gln Met Trp Gly Val Lys Asp Pro Gln Glu Ala
            100                 105                 110
Gln Asn Ile Ile Asn Ala Gln Lys Lys Lys Tyr Gly Asp Lys Val Pro
        115                 120                 125
Glu Asn Leu Glu Glu Gln Ala Ile Ser Leu Val Gly Glu Asp Leu Tyr
    130                 135                 140
Gln Ala Leu Ile Lys Gly Tyr Thr Glu Lys Gln Trp Gly Arg Ser Ala
145                 150                 155                 160
Lys Glu Leu Pro Ala Phe Ile Ile Lys Arg Ile Pro Val Arg Phe Thr
                165                 170                 175
Phe Asp Asn Asn Tyr Phe Ser Asp Arg Tyr Gln Gly Ile Pro Val Gly
            180                 185                 190
Gly Tyr Thr Lys Leu Ile Glu Lys Met Leu Glu Gly Val Asp Val Lys
        195                 200                 205
Leu Gly Ile Asp Phe Leu Lys Asp Lys Asp Ser Leu Ala Ser Lys Ala
    210                 215                 220
His Arg Ile Ile Tyr Thr Gly Pro Ile Asp Gln Tyr Phe Asp Tyr Arg
225                 230                 235                 240
Phe Gly Ala Leu Glu Tyr Arg Ser Leu Lys Phe Glu Thr Glu Arg His
                245                 250                 255
Glu Phe Pro Asn Phe Gln Gly Asn Ala Val Ile Asn Phe Thr Asp Ala
            260                 265                 270
Asn Val Pro Tyr Thr Arg Ile Ile Glu His Lys His Phe Asp Tyr Val
        275                 280                 285
Glu Thr Lys His Thr Val Val Thr Lys Glu Tyr Pro Leu Glu Trp Lys
```

```
    290                 295                 300
Val Gly Asp Glu Pro Tyr Tyr Pro Val Asn Asp Asn Lys Asn Met Glu
305                 310                 315                 320
Leu Phe Lys Lys Tyr Arg Glu Leu Ala Ser Arg Glu Asp Lys Val Ile
                325                 330                 335
Phe Gly Gly Arg Leu Ala Glu Tyr Lys Tyr Tyr Asp Met His Gln Val
            340                 345                 350
Ile Ser Ala Ala Leu Tyr Gln Val Lys Asn Ile Met Ser Thr Asp
        355                 360                 365


      <210> 380
      <211> 371
      <212> PRT
      <213> E. Coli

      <400> 380
Met Phe Pro Lys Ile Met Asn Asp Glu Asn Phe Phe Lys Lys Ala Ala
 1               5                  10                  15
Ala His Gly Glu Glu Pro Pro Leu Thr Pro Gln Asn Glu His Gln Arg
            20                  25                  30
Ser Gly Leu Arg Phe Ala Arg Arg Val Arg Leu Pro Arg Ala Val Gly
        35                  40                  45
Leu Ala Gly Met Phe Leu Pro Ile Ala Ser Thr Leu Val Ser His Pro
    50                  55                  60
Pro Pro Gly Trp Trp Trp Leu Val Leu Val Gly Trp Ala Phe Val Trp
65                  70                  75                  80
Pro His Leu Ala Trp Gln Ile Ala Ser Arg Ala Val Asp Pro Leu Ser
                85                  90                  95
Arg Glu Ile Tyr Asn Leu Lys Thr Asp Ala Val Leu Ala Gly Met Trp
            100                 105                 110
Val Gly Val Met Gly Val Asn Val Leu Pro Ser Thr Ala Met Leu Met
        115                 120                 125
Ile Met Cys Leu Asn Leu Met Gly Ala Gly Gly Pro Arg Leu Phe Val
    130                 135                 140
Ala Gly Leu Val Leu Met Val Val Ser Cys Leu Val Thr Leu Glu Leu
145                 150                 155                 160
Thr Gly Ile Thr Val Ser Phe Asn Ser Ala Pro Leu Glu Trp Trp Leu
                165                 170                 175
Ser Leu Pro Ile Ile Val Ile Tyr Pro Leu Leu Phe Gly Trp Val Ser
            180                 185                 190
Tyr Gln Thr Ala Thr Lys Leu Ala Glu His Lys Arg Arg Leu Gln Val
        195                 200                 205
Met Ser Thr Arg Asp Gly Met Thr Gly Val Tyr Asn Arg Arg His Trp
    210                 215                 220
Glu Thr Met Leu Arg Asn Glu Phe Asp Asn Cys Arg Arg His Asn Arg
225                 230                 235                 240
Asp Ala Thr Leu Leu Ile Ile Asp Ile Asp His Phe Lys Ser Ile Asn
                245                 250                 255
Asp Thr Trp Gly His Asp Val Gly Asp Glu Ala Ile Val Ala Leu Thr
            260                 265                 270
Arg Gln Leu Gln Ile Thr Leu Arg Gly Ser Asp Val Ile Gly Arg Phe
        275                 280                 285
Gly Gly Asp Glu Phe Ala Val Ile Met Ser Gly Thr Pro Ala Glu Ser
    290                 295                 300
Ala Ile Thr Ala Met Leu Arg Val His Glu Gly Leu Asn Thr Leu Arg
305                 310                 315                 320
```

```
Leu Pro Asn Thr Pro Gln Val Thr Leu Arg Ile Ser Val Gly Val Ala
                325                 330                 335
Pro Leu Asn Pro Gln Met Ser His Tyr Arg Glu Trp Leu Lys Ser Ala
            340                 345                 350
Asp Leu Ala Leu Tyr Lys Ala Lys Lys Ala Gly Arg Asn Arg Thr Glu
        355                 360                 365
Val Ala Ala
    370
```

<210> 381
<211> 467
<212> PRT
<213> E. Coli

<400> 381

```
Met Asp Val Asn Val Asp Gln Phe Asp Thr Glu Ala Phe Arg Thr Asp
 1               5                  10                  15
Lys Leu Glu Leu Thr Ser Gly Asn Ile Ala Asp His Asn Gly Asn Val
            20                  25                  30
Val Ser Gly Val Phe Asp Ile His Ser Ser Asp Tyr Val Leu Asn Ala
        35                  40                  45
Asp Leu Val Asn Asp Arg Thr Trp Asp Thr Ser Lys Ser Asn Tyr Gly
    50                  55                  60
Tyr Gly Ile Val Ala Met Asn Ser Asp Gly His Leu Thr Ile Asn Gly
65                  70                  75                  80
Asn Gly Asp Val Asp Asn Gly Thr Glu Leu Asp Asn Ser Ser Val Asp
                85                  90                  95
Asn Val Val Ala Ala Thr Gly Asn Tyr Lys Val Arg Ile Asp Asn Ala
            100                 105                 110
Thr Gly Ala Gly Ala Ile Ala Asp Tyr Lys Asp Lys Glu Ile Ile Tyr
        115                 120                 125
Val Asn Asp Val Asn Ser Asn Ala Thr Phe Ser Ala Ala Asn Lys Ala
    130                 135                 140
Asp Leu Gly Ala Tyr Thr Tyr Gln Ala Glu Gln Arg Gly Asn Thr Val
145                 150                 155                 160
Val Leu Gln Gln Met Glu Leu Thr Asp Tyr Ala Asn Met Ala Leu Ser
                165                 170                 175
Ile Pro Ser Ala Asn Thr Asn Ile Trp Asn Leu Glu Gln Asp Thr Val
            180                 185                 190
Gly Thr Arg Leu Thr Asn Ser Arg His Gly Leu Ala Asp Asn Gly Gly
        195                 200                 205
Ala Trp Val Ser Tyr Phe Gly Gly Asn Phe Asn Gly Asp Asn Gly Thr
    210                 215                 220
Ile Asn Tyr Asp Gln Asp Val Asn Gly Ile Met Val Gly Val Asp Thr
225                 230                 235                 240
Lys Ile Asp Gly Asn Asn Ala Lys Trp Ile Val Gly Ala Ala Ala Gly
                245                 250                 255
Phe Ala Lys Gly Asp Met Asn Asp Arg Ser Gly Gln Val Asp Gln Asp
            260                 265                 270
Ser Gln Thr Ala Tyr Ile Tyr Ser Ser Ala His Phe Ala Asn Asn Val
        275                 280                 285
Phe Val Asp Gly Ser Leu Ser Tyr Ser His Phe Asn Asn Asp Leu Ser
    290                 295                 300
Ala Thr Met Ser Asn Gly Thr Tyr Val Asp Gly Ser Thr Asn Ser Asp
305                 310                 315                 320
Ala Trp Gly Phe Gly Leu Lys Ala Gly Tyr Asp Phe Lys Leu Gly Asp
                325                 330                 335
```

```
Ala Gly Tyr Val Thr Pro Tyr Gly Ser Val Ser Gly Leu Phe Gln Ser
            340                 345                 350
Gly Asp Asp Tyr Gln Leu Ser Asn Asp Met Lys Val Asp Gly Gln Ser
        355                 360                 365
Tyr Asp Ser Met Arg Tyr Glu Leu Gly Val Asp Ala Gly Tyr Thr Phe
    370                 375                 380
Thr Tyr Ser Glu Asp Gln Ala Leu Thr Pro Tyr Phe Lys Leu Ala Tyr
385                 390                 395                 400
Val Tyr Asp Asp Ser Asn Asn Asp Asn Asp Val Asn Gly Asp Ser Ile
                405                 410                 415
Asp Asn Gly Thr Glu Gly Ser Ala Val Arg Val Gly Leu Gly Thr Gln
            420                 425                 430
Phe Ser Phe Thr Lys Asn Phe Ser Ala Tyr Thr Asp Ala Asn Tyr Leu
        435                 440                 445
Gly Gly Gly Asp Val Asp Gln Asp Trp Ser Ala Asn Val Gly Val Lys
    450                 455                 460
Tyr Thr Trp
465
```

<210> 382
<211> 222
<212> PRT
<213> E. Coli

<400> 382

```
Met Pro Val Lys Asp Leu Thr Gly Ile Thr Ala Lys Asp Ala Gln Met
 1               5                  10                  15
Leu Ser Val Val Lys Pro Leu Gln Glu Phe Gly Lys Leu Asp Lys Cys
            20                  25                  30
Leu Ser Arg Tyr Gly Thr Arg Phe Glu Phe Asn Asn Glu Lys Gln Val
        35                  40                  45
Ile Phe Ser Ser Asp Val Asn Asn Glu Asp Thr Phe Val Ile Leu Glu
    50                  55                  60
Gly Val Ile Ser Leu Arg Arg Glu Glu Asn Val Leu Ile Gly Ile Thr
65                  70                  75                  80
Gln Ala Pro Tyr Ile Met Gly Leu Ala Asp Gly Leu Met Lys Asn Asp
                85                  90                  95
Ile Pro Tyr Lys Leu Ile Ser Glu Gly Asn Cys Thr Gly Tyr His Leu
            100                 105                 110
Pro Ala Lys Gln Thr Ile Thr Leu Ile Glu Gln Asn Gln Leu Trp Arg
        115                 120                 125
Asp Ala Phe Tyr Trp Leu Ala Trp Gln Asn Arg Ile Leu Glu Leu Arg
    130                 135                 140
Asp Val Gln Leu Ile Gly His Asn Ser Tyr Glu Gln Ile Arg Ala Thr
145                 150                 155                 160
Leu Leu Ser Met Ile Asp Trp Asn Glu Glu Leu Arg Ser Arg Ile Gly
                165                 170                 175
Val Met Asn Tyr Ile His Gln Arg Thr Arg Ile Ser Arg Ser Val Val
            180                 185                 190
Ala Glu Val Leu Ala Ala Leu Arg Lys Gly Gly Tyr Ile Glu Met Asn
        195                 200                 205
Lys Gly Lys Leu Val Ala Ile Asn Arg Leu Pro Ser Glu Tyr
    210                 215                 220
```

<210> 383
<211> 84
<212> PRT
<213> E. Coli

<400> 383
Met Thr Asp Lys Ile Arg Thr Leu Gln Gly Arg Val Val Ser Asp Lys
1 5 10 15
Met Glu Lys Ser Ile Val Val Ala Ile Glu Arg Phe Val Lys His Pro
20 25 30
Ile Tyr Gly Lys Phe Ile Lys Arg Thr Thr Lys Leu His Val His Asp
35 40 45
Glu Asn Asn Glu Cys Gly Ile Gly Asp Val Val Glu Ile Arg Glu Cys
50 55 60
Arg Pro Leu Ser Lys Thr Lys Ser Trp Thr Leu Val Arg Val Val Glu
65 70 75 80
Lys Ala Val Leu

<210> 384
<211> 63
<212> PRT
<213> E. Coli

<400> 384
Met Lys Ala Lys Glu Leu Arg Glu Lys Ser Val Glu Glu Leu Asn Thr
1 5 10 15
Glu Leu Leu Asn Leu Leu Arg Glu Gln Phe Asn Leu Arg Met Gln Ala
20 25 30
Ala Ser Gly Gln Leu Gln Gln Ser His Leu Leu Lys Gln Val Arg Arg
35 40 45
Asp Val Ala Arg Val Lys Thr Leu Leu Asn Glu Lys Ala Gly Ala
50 55 60

<210> 385
<211> 136
<212> PRT
<213> E. Coli

<400> 385
Met Leu Gln Pro Lys Arg Thr Lys Phe Arg Lys Met His Lys Gly Arg
1 5 10 15
Asn Arg Gly Leu Ala Gln Gly Thr Asp Val Ser Phe Gly Ser Phe Gly
20 25 30
Leu Lys Ala Val Gly Arg Gly Arg Leu Thr Ala Arg Gln Ile Glu Ala
35 40 45
Ala Arg Arg Ala Met Thr Arg Ala Val Lys Arg Gln Gly Lys Ile Trp
50 55 60
Ile Arg Val Phe Pro Asp Lys Pro Ile Thr Glu Lys Pro Leu Ala Val
65 70 75 80
Arg Met Gly Lys Gly Lys Gly Asn Val Glu Tyr Trp Val Ala Leu Ile
85 90 95
Gln Pro Gly Lys Val Leu Tyr Glu Met Asp Gly Val Pro Glu Glu Leu
100 105 110
Ala Arg Glu Ala Phe Lys Leu Ala Ala Ala Lys Leu Pro Ile Lys Thr
115 120 125

```
Thr Phe Val Thr Lys Thr Val Met
    130                 135
```

<210> 386
<211> 233
<212> PRT
<213> E. Coli

<400> 386

```
Met Gly Gln Lys Val His Pro Asn Gly Ile Arg Leu Gly Ile Val Lys
 1               5                  10                  15
Pro Trp Asn Ser Thr Trp Phe Ala Asn Thr Lys Glu Phe Ala Asp Asn
            20                  25                  30
Leu Asp Ser Asp Phe Lys Val Arg Gln Tyr Leu Thr Lys Glu Leu Ala
        35                  40                  45
Lys Ala Ser Val Ser Arg Ile Val Ile Glu Arg Pro Ala Lys Ser Ile
    50                  55                  60
Arg Val Thr Ile His Thr Ala Arg Pro Gly Ile Val Ile Gly Lys Lys
65                  70                  75                  80
Gly Glu Asp Val Glu Lys Leu Arg Lys Val Val Ala Asp Ile Ala Gly
                85                  90                  95
Val Pro Ala Gln Ile Asn Ile Ala Glu Val Arg Lys Pro Glu Leu Asp
            100                 105                 110
Ala Lys Leu Val Ala Asp Ser Ile Thr Ser Gln Leu Glu Arg Arg Val
        115                 120                 125
Met Phe Arg Arg Ala Met Lys Arg Ala Val Gln Asn Ala Met Arg Leu
    130                 135                 140
Gly Ala Lys Gly Ile Lys Val Glu Val Ser Gly Arg Leu Gly Gly Ala
145                 150                 155                 160
Glu Ile Ala Arg Thr Glu Trp Tyr Arg Glu Gly Arg Val Pro Leu His
                165                 170                 175
Thr Leu Arg Ala Asp Ile Asp Tyr Asn Thr Ser Glu Ala His Thr Thr
            180                 185                 190
Tyr Gly Val Ile Gly Val Lys Val Trp Ile Phe Lys Gly Glu Ile Leu
        195                 200                 205
Gly Gly Met Ala Ala Val Glu Gln Pro Glu Lys Pro Ala Ala Gln Pro
    210                 215                 220
Lys Lys Gln Gln Arg Lys Gly Arg Lys
225                 230
```

<210> 387
<211> 110
<212> PRT
<213> E. Coli

<400> 387

```
Met Glu Thr Ile Ala Lys His Arg His Ala Arg Ser Ser Ala Gln Lys
 1               5                  10                  15
Val Arg Leu Val Ala Asp Leu Ile Arg Gly Lys Lys Val Ser Gln Ala
            20                  25                  30
Leu Asp Ile Leu Thr Tyr Thr Asn Lys Lys Ala Ala Val Leu Val Lys
        35                  40                  45
Lys Val Leu Glu Ser Ala Ile Ala Asn Ala Glu His Asn Asp Gly Ala
```

```
    50                  55                  60
Asp Ile Asp Asp Leu Lys Val Thr Lys Ile Phe Val Asp Glu Gly Pro
65                  70                  75                  80
Ser Met Lys Arg Ile Met Pro Arg Ala Lys Gly Arg Ala Asp Arg Ile
                85                  90                  95
Leu Lys Arg Thr Ser His Ile Thr Val Val Val Ser Asp Arg
            100                 105                 110
```

<210> 388
<211> 92
<212> PRT
<213> E. Coli

<400> 388

```
Met Pro Arg Ser Leu Lys Lys Gly Pro Phe Ile Asp Leu His Leu Leu
 1               5                  10                  15
Met Lys Val Glu Lys Ala Val Glu Ser Gly Asp Lys Lys Pro Leu Arg
            20                  25                  30
Thr Trp Ser Arg Arg Ser Thr Ile Phe Pro Asn Met Ile Gly Leu Thr
        35                  40                  45
Ile Ala Val His Asn Gly Arg Gln His Val Pro Val Phe Val Thr Asp
    50                  55                  60
Glu Met Val Gly His Lys Leu Gly Glu Phe Ala Pro Thr Arg Thr Tyr
65                  70                  75                  80
Arg Gly His Ala Ala Asp Lys Lys Ala Lys Lys Lys
                85                  90
```

<210> 389
<211> 273
<212> PRT
<213> E. Coli

<400> 389

```
Met Ala Val Val Lys Cys Lys Pro Thr Ser Pro Gly Arg Arg His Val
 1               5                  10                  15
Val Lys Val Val Asn Pro Glu Leu His Lys Gly Lys Pro Phe Ala Pro
            20                  25                  30
Leu Leu Glu Lys Asn Ser Lys Ser Gly Gly Arg Asn Asn Asn Gly Arg
        35                  40                  45
Ile Thr Thr Arg His Ile Gly Gly Gly His Lys Gln Ala Tyr Arg Ile
    50                  55                  60
Val Asp Phe Lys Arg Asn Lys Asp Gly Ile Pro Ala Val Val Glu Arg
65                  70                  75                  80
Leu Glu Tyr Asp Pro Asn Arg Ser Ala Asn Ile Ala Leu Val Leu Tyr
                85                  90                  95
Lys Asp Gly Glu Arg Arg Tyr Ile Leu Ala Pro Lys Gly Leu Lys Ala
            100                 105                 110
Gly Asp Gln Ile Gln Ser Gly Val Asp Ala Ala Ile Lys Pro Gly Asn
        115                 120                 125
Thr Leu Pro Met Arg Asn Ile Pro Val Gly Ser Thr Val His Asn Val
    130                 135                 140
Glu Met Lys Pro Gly Lys Gly Gly Gln Leu Ala Arg Ser Ala Gly Thr
145                 150                 155                 160
```

```
Tyr Val Gln Ile Val Ala Arg Asp Gly Ala Tyr Val Thr Leu Arg Leu
                165                 170                 175
Arg Ser Gly Glu Met Arg Lys Val Glu Ala Asp Cys Arg Ala Thr Leu
            180                 185                 190
Gly Glu Val Gly Asn Ala Glu His Met Leu Arg Val Leu Gly Lys Ala
        195                 200                 205
Gly Ala Ala Arg Trp Arg Gly Val Arg Pro Thr Val Arg Gly Thr Ala
    210                 215                 220
Met Asn Pro Val Asp His Pro His Gly Gly Gly Glu Gly Arg Asn Phe
225                 230                 235                 240
Gly Lys His Pro Val Thr Pro Trp Gly Val Gln Thr Lys Gly Lys Lys
                245                 250                 255
Thr Arg Ser Asn Lys Arg Thr Asp Lys Phe Ile Val Arg Arg Arg Ser
            260                 265                 270
Lys
```

<210> 390
<211> 100
<212> PRT
<213> E. Coli

<400> 390

```
Met Ile Arg Glu Glu Arg Leu Leu Lys Val Leu Arg Ala Pro His Val
 1               5                  10                  15
Ser Glu Lys Ala Ser Thr Ala Met Glu Lys Ser Asn Thr Ile Val Leu
            20                  25                  30
Lys Val Ala Lys Asp Ala Thr Lys Ala Glu Ile Lys Ala Ala Val Gln
        35                  40                  45
Lys Leu Phe Glu Val Glu Val Glu Val Val Asn Thr Leu Val Val Lys
    50                  55                  60
Gly Lys Val Lys Arg His Gly Gln Arg Ile Gly Arg Arg Ser Asp Trp
65                  70                  75                  80
Lys Lys Ala Tyr Val Thr Leu Lys Glu Gly Gln Asn Leu Asp Phe Val
                85                  90                  95
Gly Gly Ala Glu
            100
```

<210> 391
<211> 201
<212> PRT
<213> E. Coli

<400> 391

```
Met Glu Leu Val Leu Lys Asp Ala Gln Ser Ala Leu Thr Val Ser Glu
 1               5                  10                  15
Thr Thr Phe Gly Arg Asp Phe Asn Glu Ala Leu Val His Gln Val Val
            20                  25                  30
Val Ala Tyr Ala Ala Gly Ala Arg Gln Gly Thr Arg Ala Gln Lys Thr
        35                  40                  45
Arg Ala Glu Val Thr Gly Ser Gly Lys Lys Pro Trp Arg Gln Lys Gly
    50                  55                  60
Thr Gly Arg Ala Arg Ser Gly Ser Ile Lys Ser Pro Ile Trp Arg Ser
```

```
65                  70                  75                  80
Gly Gly Val Thr Phe Ala Ala Arg Pro Gln Asp His Ser Gln Lys Val
                85                  90                  95
Asn Lys Lys Met Tyr Arg Gly Ala Leu Lys Ser Ile Leu Ser Glu Leu
            100                 105                 110
Val Arg Gln Asp Arg Leu Ile Val Val Glu Lys Phe Ser Val Glu Ala
        115                 120                 125
Pro Lys Thr Lys Leu Leu Ala Gln Lys Leu Lys Asp Met Ala Leu Glu
    130                 135                 140
Asp Val Leu Ile Ile Thr Gly Glu Leu Asp Glu Asn Leu Phe Leu Ala
145                 150                 155                 160
Ala Arg Asn Leu His Lys Val Asp Val Arg Asp Ala Thr Gly Ile Asp
                165                 170                 175
Pro Val Ser Leu Ile Ala Phe Asp Lys Val Val Met Thr Ala Asp Ala
            180                 185                 190
Val Lys Gln Val Glu Glu Met Leu Ala
        195                 200
```

<210> 392
<211> 209
<212> PRT
<213> E. Coli

<400> 392

```
Met Ile Gly Leu Val Gly Lys Lys Val Gly Met Thr Arg Ile Phe Thr
 1               5                  10                  15
Glu Asp Gly Val Ser Ile Pro Val Thr Val Ile Glu Val Glu Ala Asn
            20                  25                  30
Arg Val Thr Gln Val Lys Asp Leu Ala Asn Asp Gly Tyr Arg Ala Ile
        35                  40                  45
Gln Val Thr Thr Gly Ala Lys Lys Ala Asn Arg Val Thr Lys Pro Glu
    50                  55                  60
Ala Gly His Phe Ala Lys Ala Gly Val Glu Ala Gly Arg Gly Leu Trp
65                  70                  75                  80
Glu Phe Arg Leu Ala Glu Gly Glu Glu Phe Thr Val Gly Gln Ser Ile
                85                  90                  95
Ser Val Glu Leu Phe Ala Asp Val Lys Lys Val Asp Val Thr Gly Thr
            100                 105                 110
Ser Lys Gly Lys Gly Phe Ala Gly Thr Val Lys Arg Trp Asn Phe Arg
        115                 120                 125
Thr Gln Asp Ala Thr His Gly Asn Ser Leu Ser His Arg Val Pro Gly
    130                 135                 140
Ser Ile Gly Gln Asn Gln Thr Pro Gly Lys Val Phe Lys Gly Lys Lys
145                 150                 155                 160
Met Ala Gly Gln Met Gly Asn Glu Arg Val Thr Val Gln Ser Leu Asp
                165                 170                 175
Val Val Arg Val Asp Ala Glu Arg Asn Leu Leu Leu Val Lys Gly Ala
            180                 185                 190
Val Pro Gly Ala Thr Gly Ser Asp Leu Ile Val Lys Pro Ala Val Lys
        195                 200                 205
Ala
```

<210> 393
<211> 103
<212> PRT
<213> E. Coli

<400> 393
Met Gln Asn Gln Arg Ile Arg Ile Arg Leu Lys Ala Phe Asp His Arg
1 5 10 15
Leu Ile Asp Gln Ala Thr Ala Glu Ile Val Glu Thr Ala Lys Arg Thr
20 25 30
Gly Ala Gln Val Arg Gly Pro Ile Pro Leu Pro Thr Arg Lys Glu Arg
35 40 45
Phe Thr Val Leu Ile Ser Pro His Val Asn Lys Asp Ala Arg Asp Gln
50 55 60
Tyr Glu Ile Arg Thr His Leu Arg Leu Val Asp Ile Val Glu Pro Thr
65 70 75 80
Glu Lys Thr Val Asp Ala Leu Met Arg Leu Asp Leu Ala Ala Gly Val
85 90 95
Asp Val Gln Ile Ser Leu Gly
100

<210> 394
<211> 118
<212> PRT
<213> E. Coli

<400> 394
Met Ala Arg Val Lys Arg Gly Val Ile Ala Arg Ala Arg His Lys Lys
1 5 10 15
Ile Leu Lys Gln Ala Lys Gly Tyr Tyr Gly Ala Arg Ser Arg Val Tyr
20 25 30
Arg Val Ala Phe Gln Ala Val Ile Lys Ala Gly Gln Tyr Ala Tyr Arg
35 40 45
Asp Arg Arg Gln Arg Lys Arg Gln Phe Arg Gln Leu Trp Ile Ala Arg
50 55 60
Ile Asn Ala Ala Ala Arg Gln Asn Gly Ile Ser Tyr Ser Lys Phe Ile
65 70 75 80
Asn Gly Leu Lys Lys Ala Ser Val Glu Ile Asp Arg Lys Ile Leu Ala
85 90 95
Asp Ile Ala Val Phe Asp Lys Val Ala Phe Thr Ala Leu Val Glu Lys
100 105 110
Ala Lys Ala Ala Leu Ala
115

<210> 395
<211> 65
<212> PRT
<213> E. Coli

<400> 395
Met Pro Lys Ile Lys Thr Val Arg Gly Ala Ala Lys Arg Phe Lys Lys
1 5 10 15
Thr Gly Lys Gly Gly Phe Lys His Lys His Ala Asn Leu Arg His Ile
20 25 30

```
Leu Thr Lys Lys Ala Thr Lys Arg Lys Arg His Leu Arg Pro Lys Ala
        35                  40                  45
Met Val Ser Lys Gly Asp Leu Gly Leu Val Ile Ala Cys Leu Pro Tyr
    50                  55                  60
Ala
65
```

<210> 396
<211> 180
<212> PRT
<213> E. Coli

<400> 396

```
Met Lys Gly Gly Lys Arg Val Gln Thr Ala Arg Pro Asn Arg Ile Asn
 1               5                  10                  15
Gly Glu Ile Arg Ala Gln Glu Val Arg Leu Thr Gly Leu Glu Gly Glu
            20                  25                  30
Gln Leu Gly Ile Val Ser Leu Arg Glu Ala Leu Glu Lys Ala Glu Glu
        35                  40                  45
Ala Gly Val Asp Leu Val Glu Ile Ser Pro Asn Ala Glu Pro Pro Val
    50                  55                  60
Cys Arg Ile Met Asp Tyr Gly Lys Phe Leu Tyr Glu Lys Ser Lys Ser
65                  70                  75                  80
Ser Lys Glu Gln Lys Lys Lys Gln Lys Val Ile Gln Val Lys Glu Ile
                85                  90                  95
Lys Phe Arg Pro Gly Thr Asp Glu Gly Asp Tyr Gln Val Lys Leu Arg
            100                 105                 110
Ser Leu Ile Arg Phe Leu Glu Glu Gly Asp Lys Ala Lys Ile Thr Leu
        115                 120                 125
Arg Phe Arg Gly Arg Glu Met Ala His Gln Gln Ile Gly Met Glu Val
    130                 135                 140
Leu Asn Arg Val Lys Asp Asp Leu Gln Glu Leu Ala Val Val Glu Ser
145                 150                 155                 160
Phe Pro Thr Lys Ile Glu Gly Arg Gln Met Ile Met Val Leu Ala Pro
                165                 170                 175
Lys Lys Lys Gln
            180
```

<210> 397
<211> 642
<212> PRT
<213> E. Coli

<400> 397

```
Met Pro Val Ile Thr Leu Pro Asp Gly Ser Gln Arg His Tyr Asp His
 1               5                  10                  15
Ala Val Ser Pro Met Asp Val Ala Leu Asp Ile Gly Pro Gly Leu Ala
            20                  25                  30
Lys Ala Cys Ile Ala Gly Arg Val Asn Gly Glu Leu Val Asp Ala Cys
        35                  40                  45
Asp Leu Ile Glu Asn Asp Ala Gln Leu Ser Ile Ile Thr Ala Lys Asp
    50                  55                  60
Glu Glu Gly Leu Glu Ile Ile Arg His Ser Cys Ala His Leu Leu Gly
```

```
65                  70                  75                  80
His Ala Ile Lys Gln Leu Trp Pro His Thr Lys Met Ala Ile Gly Pro
                85                  90                  95
Val Ile Asp Asn Gly Phe Tyr Tyr Asp Val Asp Leu Asp Arg Thr Leu
            100                 105                 110
Thr Gln Glu Asp Val Glu Ala Leu Glu Lys Arg Met His Glu Leu Ala
        115                 120                 125
Glu Lys Asn Tyr Asp Val Ile Lys Lys Lys Val Ser Trp His Glu Ala
    130                 135                 140
Arg Glu Thr Phe Ala Asn Arg Gly Glu Ser Tyr Lys Val Ser Ile Leu
145                 150                 155                 160
Asp Glu Asn Ile Ala His Asp Asp Lys Pro Gly Leu Tyr Phe His Glu
                165                 170                 175
Glu Tyr Val Asp Met Cys Arg Gly Pro His Val Pro Asn Met Arg Phe
            180                 185                 190
Cys His His Phe Lys Leu Met Lys Thr Ala Gly Ala Tyr Trp Arg Gly
        195                 200                 205
Asp Ser Asn Asn Lys Met Leu Gln Arg Ile Tyr Gly Thr Ala Trp Ala
    210                 215                 220
Asp Lys Lys Ala Leu Asn Ala Tyr Leu Gln Arg Leu Glu Glu Ala Ala
225                 230                 235                 240
Lys Arg Asp His Arg Lys Ile Gly Lys Gln Leu Asp Leu Tyr His Met
                245                 250                 255
Gln Glu Glu Ala Pro Gly Met Val Phe Trp His Asn Asp Gly Trp Thr
            260                 265                 270
Ile Phe Arg Glu Leu Glu Val Phe Val Arg Ser Lys Leu Lys Glu Tyr
        275                 280                 285
Gln Tyr Gln Glu Val Lys Gly Pro Phe Met Met Asp Arg Val Leu Trp
    290                 295                 300
Glu Lys Thr Gly His Trp Asp Asn Tyr Lys Asp Ala Met Phe Thr Thr
305                 310                 315                 320
Ser Ser Glu Asn Arg Glu Tyr Cys Ile Lys Pro Met Asn Cys Pro Gly
                325                 330                 335
His Val Gln Ile Phe Asn Gln Gly Leu Lys Ser Tyr Arg Asp Leu Pro
            340                 345                 350
Leu Arg Met Ala Glu Phe Gly Ser Cys His Arg Asn Glu Pro Ser Gly
        355                 360                 365
Ser Leu His Gly Leu Met Arg Val Arg Gly Phe Thr Gln Asp Asp Ala
    370                 375                 380
His Ile Phe Cys Thr Glu Glu Gln Ile Arg Asp Glu Val Asn Gly Cys
385                 390                 395                 400
Ile Arg Leu Val Tyr Asp Met Tyr Ser Thr Phe Gly Phe Glu Lys Ile
                405                 410                 415
Val Val Lys Leu Ser Thr Arg Pro Glu Lys Arg Ile Gly Ser Asp Glu
            420                 425                 430
Met Trp Asp Arg Ala Glu Ala Asp Leu Ala Val Ala Leu Glu Glu Asn
        435                 440                 445
Asn Ile Pro Phe Glu Tyr Gln Leu Gly Glu Gly Ala Phe Tyr Gly Pro
    450                 455                 460
Lys Ile Glu Phe Thr Leu Tyr Asp Cys Leu Asp Arg Ala Trp Gln Cys
465                 470                 475                 480
Gly Thr Val Gln Leu Asp Phe Ser Leu Pro Ser Arg Leu Ser Ala Ser
                485                 490                 495
Tyr Val Gly Glu Asp Asn Glu Arg Lys Val Pro Val Met Ile His Arg
            500                 505                 510
Ala Ile Leu Gly Ser Met Glu Arg Phe Ile Gly Ile Leu Thr Glu Glu
        515                 520                 525
```

```
Phe Ala Gly Phe Phe Pro Thr Trp Leu Ala Pro Val Gln Val Val Ile
    530                 535                 540
Met Asn Ile Thr Asp Ser Gln Ser Glu Tyr Val Asn Glu Leu Thr Gln
545                 550                 555                 560
Lys Leu Ser Asn Ala Gly Ile Arg Val Lys Ala Asp Leu Arg Asn Glu
                565                 570                 575
Lys Ile Gly Phe Lys Ile Arg Glu His Thr Leu Arg Arg Val Pro Tyr
            580                 585                 590
Met Leu Val Cys Gly Asp Lys Glu Val Glu Ser Gly Lys Val Ala Val
        595                 600                 605
Arg Thr Arg Arg Gly Lys Asp Leu Gly Ser Met Asp Val Asn Glu Val
    610                 615                 620
Ile Glu Lys Leu Gln Gln Glu Ile Arg Ser Arg Ser Leu Lys Gln Leu
625                 630                 635                 640
Glu Glu
```

<210> 398
<211> 450
<212> PRT
<213> E. Coli

<400> 398

```
Met Thr Lys His Tyr Asp Tyr Ile Ala Ile Gly Gly Gly Ser Gly Gly
 1               5                  10                  15
Ile Ala Ser Ile Asn Arg Ala Ala Met Tyr Gly Gln Lys Cys Ala Leu
            20                  25                  30
Ile Glu Ala Lys Glu Leu Gly Gly Thr Cys Val Asn Val Gly Cys Val
        35                  40                  45
Pro Lys Lys Val Met Trp His Ala Ala Gln Ile Arg Glu Ala Ile His
    50                  55                  60
Met Tyr Gly Pro Asp Tyr Gly Phe Asp Thr Thr Ile Asn Lys Phe Asn
65                  70                  75                  80
Trp Glu Thr Leu Ile Ala Ser Arg Thr Ala Tyr Ile Asp Arg Ile His
                85                  90                  95
Thr Ser Tyr Glu Asn Val Leu Gly Lys Asn Asn Val Asp Val Ile Lys
            100                 105                 110
Gly Phe Ala Arg Phe Val Asp Ala Lys Thr Leu Glu Val Asn Gly Glu
        115                 120                 125
Thr Ile Thr Ala Asp His Ile Leu Ile Ala Thr Gly Gly Arg Pro Ser
    130                 135                 140
His Pro Asp Ile Pro Gly Val Glu Tyr Gly Ile Asp Ser Asp Gly Phe
145                 150                 155                 160
Phe Ala Leu Pro Ala Leu Pro Glu Arg Val Ala Val Val Gly Ala Gly
                165                 170                 175
Tyr Ile Ala Val Glu Leu Ala Gly Val Ile Asn Gly Leu Gly Ala Lys
            180                 185                 190
Thr His Leu Phe Val Arg Lys His Ala Pro Leu Arg Ser Phe Asp Pro
        195                 200                 205
Met Ile Ser Glu Thr Leu Val Glu Val Met Asn Ala Glu Gly Pro Gln
    210                 215                 220
Leu His Thr Asn Ala Ile Pro Lys Ala Val Val Lys Asn Thr Asp Gly
225                 230                 235                 240
Ser Leu Thr Leu Glu Leu Glu Asp Gly Arg Ser Glu Thr Val Asp Cys
                245                 250                 255
Leu Ile Trp Ala Ile Gly Arg Glu Pro Ala Asn Asp Asn Ile Asn Leu
```

```
            260                 265                 270
Glu Ala Ala Gly Val Lys Thr Asn Glu Lys Gly Tyr Ile Val Val Asp
        275                 280                 285
Lys Tyr Gln Asn Thr Asn Ile Glu Gly Ile Tyr Ala Val Gly Asp Asn
    290                 295                 300
Thr Gly Ala Val Glu Leu Thr Pro Val Ala Val Ala Ala Gly Arg Arg
305                 310                 315                 320
Leu Ser Glu Arg Leu Phe Asn Asn Lys Pro Asp Glu His Leu Asp Tyr
                325                 330                 335
Ser Asn Ile Pro Thr Val Val Phe Ser His Pro Pro Ile Gly Thr Val
            340                 345                 350
Gly Leu Thr Glu Pro Gln Ala Arg Glu Gln Tyr Gly Asp Asp Gln Val
        355                 360                 365
Lys Val Tyr Lys Ser Ser Phe Thr Ala Met Tyr Thr Ala Val Thr Thr
    370                 375                 380
His Arg Gln Pro Cys Arg Met Lys Leu Val Cys Val Gly Ser Glu Glu
385                 390                 395                 400
Lys Ile Val Gly Ile His Gly Ile Gly Phe Gly Met Asp Glu Met Leu
                405                 410                 415
Gln Gly Phe Ala Val Ala Leu Lys Met Gly Ala Thr Lys Lys Asp Phe
            420                 425                 430
Asp Asn Thr Val Ala Ile His Pro Thr Ala Ala Glu Glu Phe Val Thr
        435                 440                 445
Met Arg
    450
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<210> 399
<211> 2904
<212> RNA
<213> E. Coli

<400> 399

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aagguuaagc cucacgguuc auuaguaccg guuagcucaa cgcaucgcug cgcuuacaca      60
cccggccuau caacgucguc gucuucaacg uuccuucagg acccuuaaag ggucagggag     120
aacucaucuc ggggcaaguu ucgugcuuag augcuuucag cacuuaucuc uuccgcauuu     180
agcuaccggg cagugccauu ggcaugacaa cccgaacacc agugaugcgu ccacuccggu     240
ccucucguac uaggagcagc cccccucagu ucuccagcgc ccacggcaga uagggaccga     300
acugucucac gacguucuaa acccagcucg cguaccacuu uaaauggcga acagccauac     360
ccuugggacc uacuucagcc ccaggaugug augagccgac aucgaggugc caaacaccgc     420
cgucgauaug aacucuuggg cgguaucagc cuguuauccc cggaguaccu uuuauccguu     480
gagcgauggc ccuuccauuc agaaccaccg gaucacuaug accugcuuuc gcaccugcuc     540
gcgccgucac gcucgcaguc aagcuggcuu augccauugc acuaaccucc ugauguccga     600
ccaggauuag ccaaccuucg ugcuccuccg uuacucuuua ggaggagacc gccccaguca     660
aacuacccac cagacacugu ccgcaacccg gauuacgggu caacguuaga acaucaaaca     720
uuaaagggug guauuucaag gucggcucca ugcagacugg cguccacacu ucaaagccuc     780
ccaccuaucc uacacaucaa ggcucaaugu ucagugucaa gcuauaguaa agguucacgg     840
ggucuuuccg ucuugccgcg gguacacugc aucuucacag cgaguucaau uucacugagu     900
cucgggugga gacagccugg ccaucauuac gccauucgug caggucggaa cuuacccgac     960
aaggaauuuc gcuaccuuag gaccguuaua guuacggccg ccguuuaccg gggcuucgau    1020
caagagcuuc gcuugcgcua accccaucaa uuaaccuucc ggcaccgggc aggcgucaca    1080
ccguauacgu ccacuuucgu guuugcacag ugcuguguuu uuaauaaaca guugcagcca    1140
gcugguaucu ucgacugauu ucagcuccau ccgcgaggga ccucaccuac auaucagcgu    1200
gccuucuccc gaaguuacgg caccauuuug ccuaguuccu ucacccgagu ucucucaagc    1260
gccuugguau ucucuaccug accaccugug ucgguuuggg guacgauuug auguuaccug    1320
augcuuagag gcuuuuccug gaagcagggc auuuguugcu ucagcaccgu agugccucgu    1380
```

caucacgccu cagccuugau uuuccggauu ugccuggaaa accagccuac acgcuuaaac 1440
cgggacaacc gucgcccggc caacauagcc uucuccgucc ccccuucgca guaacaccaa 1500
guacaggaau auuaaccugu uucccaucga cuacgccuuu cggccucgcc uuaggggucg 1560
acucacccug ccccgauuaa cguuggacag gaacccuugg ucuuccggcg agcgggcuuu 1620
ucacccgcuu uaucguuacu uaugucagca uucgcacuuc ugauaccucc agcaugccuc 1680
acagcacacc uucgcaggcu uacagaacgc uccccuaccc aacaacgcau aagcgucgcu 1740
gccgcagcuu cggugcaugg uuuagccccg uuacaucuuc cgcgcaggcc gacucgacca 1800
gugagcuauu acgcuuucuu uaaaugaugg cugcuucuaa gccaacaucc uggcugucug 1860
ggccuuccca caucguuucc cacuuaacca ugacuuuggg accuuagcug gcggucuggg 1920
uuguuucccu cuucacgacg gacguuagca cccgccgugu gucucccgug auaacauucu 1980
ccgguauucg caguuugcau cggguuggua agucgggaug acccccuugc cgaaacagug 2040
cucuaccccc ggagaugaau ucacgaggcg cuaccuaaau agcuuucggg gagaaccagc 2100
uaucucccgg uuugauuggc cuuucacccc cagccacaag ucauccgcua auuuuucaac 2160
auuagucggu ucgguccucc aguuaguguu acccaaccuu caaccugccc auggcuagau 2220
caccgggguu cgggucuaua cccugcaacu uaacgcccag uuaagacucg guuucccuuc 2280
ggcuccccua uucgguuaac cuugcuacag aauauaaguc gcugacccau uauacaaaag 2340
guacgcaguc acacgccuaa gcgugcuccc acugcuugua cguacacggu uucagguucu 2400
uuuucacucc ccucgccggg guucuuuucg ccuuucccuc acgguacugg uucacuaucg 2460
gucagucagg aguauuuagc cuuggaggau ggucccccca uauucagaca ggauaccacg 2520
ugucccgccc uacucaucga gcucacagca ugugcauuuu uguguacggg gcugucaccc 2580
uguaucgcgc gccuuuccag acgcuuccac uaacacacac acugauucag gcucugggcu 2640
gcuccccguu cgcucgccgc uacuggggga aucucgguug auuucuuuuc cucgggguac 2700
uuagauguuu caguuccccc gguucgccuc auuaaccuau ggauucaguu aaugauagug 2760
ugucgaaaca cacuggguuu ccccauucgg aaaucgccgg uuauaacggu ucauaucacc 2820
uuaccgacgc uuaucgcaga uuagcacguc cuucaucgcc ucugacugcc agggcaucca 2880
ccguguacgc uuagucgcuu aacc 2904

<210> 400
<211> 120
<212> RNA
<213> E. Coli

<400> 400
augccuggca guucccuacu cucgcauggg gagaccccac acuaccaucg gcgcuacggc 60
guuucacuuc ugaguucggc auggggucag gugggaccac cgcgcuacgg ccgccaggca 120

<210> 401
<211> 76
<212> RNA
<213> E. Coli

<400> 401
gucccccuucg ucuagaggcc caggacaccg cccuuucacg gcgguaacag ggguucgaau 60
ccccuagggg acgcca 76

<210> 402
<211> 1549
<212> RNA
<213> E. Coli

<400> 402

aaauugaaga guuugaucau ggcucagauu gaacgcuggc ggcaggccua acacaugcaa 60
gucgaacggu aacaggaagc agcuugcugc uucgcugacg aguggcggac gggugaguaa 120
ugucugggaa gcugccugau ggagggggau aacuacugga aacgguagcu aauaccgcau 180
aaugucgcaa gaccaaagag ggggaccuuc gggccucuug ccaucggaug ugcccagaug 240
ggauuagcuu guuggugggg uaacggcuca ccaaggcgac gaucccuagc uggucugaga 300
ggaugaccag ccacacugga acugagacac gguccagacu ccuacgggag gcagcagugg 360
ggaauauugc acaaugggcg caagccugau gcagccaugc cgcguguaug aagaaggccu 420
ucggguugua aaguacuuuc agcggggagg aagggaguaa aguuaauacc uuugcucauu 480
gacguuaccc gcagaagaag caccggcuaa cuccgugcca gcagccgcgg uaauacggag 540
ggugcaagcg uuaaucggaa uuacugggcg uaaagcgcac gcaggcgggu ugguuaaguc 600
agaugugaaa uccccgggcu caaccuggga acugcaucug auacuggcaa gcuugagucu 660
cguagagggg gguagaauuc cagguguagc ggugaaaugc guagagaucu ggaggaauac 720
cgguggcgaa ggcggccccc uggacgaaga cugacgcuca ggugcgaaag cgugggagc 780
aaacaggauu agauacccug guaguccacg ccguaaacga ugucgacuug gagguugugc 840
ccuugaggcg uggcuuccgg agcuaacgcg uuaagucgac cgccuggga guacggccgc 900
aagguuaaaa cucaaaugaa uugacggggg cccgcacaag cgguggagca ugugguuuaa 960
uucgaugcaa cgcgaagaac cuuaccuggu cuugacaucc acggaaguuu ucagagauga 1020
gaaugugccu ucgggaaccg ugagacaggu gcugcauggc ugucgucagc ucguguugug 1080
aaauguuggg uuaagucccg caacgagcgc aacccuuauc cuuuguugcc agcgguccgg 1140
ccgggaacuc aaaggagacu gccagugaua aacuggagga agguggggau gacgucaagu 1200
caucauggcc cuuacgacca gggcuacaca cgugcuacaa uggcgcauac aaagagaagc 1260
gaccucgcga gagcaagcgg accucauaaa gugcgucgua guccggauug gagucugcaa 1320
cucgacucca ugaagucgga aucgcuagua aucguggauc agaaugccac ggugaauacg 1380
uucccgggcc uuguacacac cgcccgucac accaugggag uggguugcaa aagaaguagg 1440
uagcuuaacc uucgggaggg cgcuuaccac uuugugauuc augacugggg ugaagucgua 1500
acaagguaac cguaggggaa ccugcgguug gaucaccucc uuaccuuaa 1549

<210> 403
<211> 17
<212> DNA
<213> Artificial

<220>
<223> Primer Oligonucleotide

<400> 403
tgtttatcag accgctt 17

<210> 404
<211> 18
<212> DNA
<213> Artificial

<220>
<223> Primer Oligonucleotide

<400> 404
acaatttcac acagcctc 18

<210> 405
<211> 159
<212> DNA
<213> Escherichia coli

<400> 405
caggtggtat ggaaacccaa aatggagacg ggaagctgaa ccagatagtt actggaggtg 60
atcaccagca gatgaaataa cgataaccag aacaacgcct atagcgttg agtttgcgag 120
aaaacgttca tattgtacct ttttgattaa ccattgggg 159

<210> 406
<211> 640
<212> DNA
<213> Escherichia coli

<220>
<221> misc_feature
<222> (1)...(640)
<223> n = A,T,C or G

<400> 406
ggggnccaaa gtgtttgggn cgggcaactg gaggccaacc ttaanttngg ggaaattttt 60
aanaaaaggc ggggatttgt nagccacggg ngattanttt anaataaatt aagtgttgcc 120
ataaggggac aaagngaagg aagtggntat taanggannc gccaatgcga nttagggcag 180
accattcggc cattcgcctt cttggttatc gaagttcatc cagatagccg ttgccngacc 240
gaccagattc gcttcnggca caaagcccca gtaacggctg tccgcgctgt tgtcgcggtt 300
gtcgcccatc atgaagtatt gtcccggagg aacaatccag gttgccagtt gttgccctgg 360
ctgctggtaa tacatcccca cctgatcctg cgcaatcggc actgtcagaa tgcggtgcgt 420
cacatcaccc agtgtctctt tacgctcgga aagacgaatt ccattttctt tggtttcgtt 480
tttcggcact tcaaagaatc cgctggtcgc ttccccacca ttacggcgtg agaaggtctg 540
aacgaaatcg ctcggttcca cgtttgagta ggtgaccggc agcgcgtttt cacacgcctg 600
gccggaactg catcccggtt gaatcgtcag ctcttttgag 640

<210> 407
<211> 682
<212> DNA
<213> Escherichia coli

<220>
<221> misc_feature
<222> (1)...(682)
<223> n = A,T,C or G

<400> 407
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cccagtcggc agcgacaact tgcgttaaag tcgcaaaatt atcatctgca ctcactgcgt 120
gacgtaagcg gatggagtgg ccggaaacct catagtgacc gcccaccagt tggcctgcat 180
cgctttgtag cgtacgcgcg gcattggcaa taagattcag atactcagac tcttccgggg 240
ccttcgccag cataaaagag gaggatgctc gcgtatgcag caactgctcc agcgcaaatt 300
gcagccgcgg ttgagtatca ctgaataaag gatcgttttc gtcaatcaaa tgtggctgag 360
caaatatttc ctgatagcta tcggtatcag gaaccaggtc acgccatgca agtttcgtaa 420
tggtcaaagt tgatgttttt tagtctgttg tcaaagccgc nattataccn gtaaccggca 480
ctacagcaca cgtagaaagc acccgacaat actcctggca tgggcgttaa agctcacagg 540
atggagatct tttcttcact ggcctaaaaa gctgatattc tgtaaagagt tacacngtaa 600
cattgagatc gctatgaaat atcaacaact tggaaaatct tgnaaagcng gttggaaaat 660
ggaaagtatc tggttaagaa gc 682

<210> 408
<211> 309
<212> DNA
<213> Escherichia coli

<400> 408
ggggatccgg cagaatttta cgctgaccaa tgacgcgacg acgtggcatg gaaatactcc 60
gttgttaatt caggattgtc caaaactcta cgagtttagt ttgacattta agttaaaacg 120
tttggcctta cttaacggag aaccattaag ccttaggacg cttcacgcca tacttggaac 180
gagcctgctt acggtcttta acgccggagc agtcaagcgc accacgtacg gtgtggtaac 240
gaacacccgg gaggtcttta acacgaccgc cacggatcag gatcacggag tgctcctgca 300
gccaagctt 309

<210> 409
<211> 1167
<212> DNA
<213> Escherichia coli

<400> 409
gtcgacccat ctgtccattg agcggacagt ttgtgcaaca ctattttgtt gaccggaaaa 60
tggaacactt tccgcaatgc ctgttgctat cacgcttaaa ccatttcatt gcgatttaca 120
cagaacggac gtcctgtcgc agtatattaa gtcgtcgata gaaacaagca ttgaaaggca 180
cagcagtagt caaacagtgt gaaacgctac tggcgcctta cagcgcaaaa aggctggtga 240
ctaaaaagtc accagccatc agcctgattt ctcaggctgc aaccggaagg gttggcttat 300
ttaacttcaa cttcagcgcc agcttcttcc agagcttttt tcagtgcttc tgcgtcgtct 360
ttgctcacgc cttctttcag agcagccggt gcagattcta ccaggtcttt agcttctttc 420
agacccaggc cagttgcgcc acgtactgct ttgataacag caactttgtt agcgccagca 480
gctttcagaa ttacgtcgaa ttcagttttt tcttcagcag cttcaaccgg gccagcagct 540
acagctacag cagcagcagc ggaaacaccg aatttttctt ycattgcaga gatcaagttc 600
tacaacgtcc attacagaca tagctgcaac tgcttcaatg awttgatctt tagtgataga 660
catttaaatk gttcctgaat atcagaataa gtttatacgt aagcgaatgc gttaaaaaga 720
taactgcgaw taagcagctt ytttcgcatc gcgtacagma gccagagtac gaaccagttt 780
gccagccgaa gcttctttca tggttgccat caggcgtgca attgcttctt cgtaggtcgg 840
cagagttgcc aggcggtcga tctgagacgc cgggatcagc tcaccttcaa aggcagcggc 900
tttgacctca aattttgcat tcgctttcgc gaactctttg aacagacgag cagcagcgcc 960
cgggtgttcc atagagtatg caatcagggt cggaccaaca aacgcgtctt tcaggcactc 1020
gaacggagta ccttcaacag cacggcgcag cagggtgtta cgaacaacac gcatgtatac 1080
gccagcttcg cgacctgctt tacgcagttc agtcatttta tctacagtta cgcccacggg 1140
aatccgcaac tactgcaagc caagctt 1167

<210> 410
<211> 404
<212> DNA
<213> Escherichia coli

<400> 410
caacmctatt ttgktggacc ggaaaakgga acactttccg cawkgcctgt tgctatcacg 60
cttaaaccat ttcattgcga tttacacaga acggacgtcc tgtcgcagta tattaagtcg 120
tcgatagaaa caagcattga aaggcacagc agtagtcaaa cagtgtgaaa cgctactggc 180
gccttacagc gcaaaaaggc tggtgactaa aaagtcacca gccatcagcc tgatttctca 240
ggctgcaacc ggaagggttg gcttatttaa cttcaacttc agcgccagct tcttccagag 300
ctttttcag tgcttctgcg tcgtctttgc tcacgccttc tttcagagca gccggtgcag 360
attctaccag gtctttagct tctttcagac ccaggccagt tgcg 404

<210> 411
<211> 152
<212> DNA
<213> Escherichia coli

<400> 411
agagcttttt tcagtgcttc tgcgtcgtct ttgctcacgc cttctttcaa gagcagcccg 60
gtgcagattc taccaggtct ttagcttctt tcagacccag gccagttgcg ccacgtactg 120

ctttgataac agcaactttg ttagcgccag ca 152

<210> 412
<211> 825
<212> DNA
<213> Escherichia coli

<220>
<221> misc_feature
<222> (1)...(825)
<223> n = A,T,C or G

<400> 412
gatccgtcga cccatctgtc cattgagcgg acagtttgtg caacactatt ttgttgaccg 60
gaaaatggaa cactttccgc aatgcctgtt gctatcacgc ttaamccatt tcattgcgat 120
ttacacagaa cggacgtcct gtcgcagtat attaagtcgt cgatagaaac aagcattgaa 180
aggcacagca gtagtcaaac agtgtgaaac gctactggcg ccttacagcg caaaaaggct 240
ggtgactaaa aagtcaccag ccatcagcct gatttctcag gctgcaaccg gaagggttgg 300
cttatttaac ttcaacttca gcgccagctt cttccagagc ttttttcagt gcttctgcgt 360
cgtctttgct cacgccttct ttcagagcag ccgggtgcag attctaccag gtctttagct 420
tctttcagac ccaggccagt tgcgccacgt actgctttga taacagcaac tttgttagcg 480
ccagcagctt tcagaattac gtcgaattca agtttttttct tcagcagctt caaccgggcc 540
agcagctaca gctacagcag cagcagcgga aacaccgaat ttttcttyca ttggcagaga 600
tcaagttcta caacgtccat tacagacata gctgcaactg cttcaatgat tkgatcttwa 660
gtgatagaca tttaaattgt tcctgaatat cagaataagt ttatacgtaa gcgaatgcgt 720
taaaaagata actgcgatta agcagcttct ttcgcatcgc gtacagcagc cagaggtcga 780
accagtttgc cagccgaagg ttggcttttc agcctnnncn natta 825

<210> 413
<211> 425
<212> DNA
<213> Escherichia coli

<400> 413
agtagtcaaa caggtgkgra acgctactgg cgccttacag cgcaaaaagg ctggtgacta 60
aaaagtcacc agccatcarc ctgatttctc aggctgcaac ccggaagggt tggcttattt 120
aacttcaact tcagcgccag cttcttccag agctttttc agtgcttctg cgtcgtcttt 180
gctcacgcct tctttcagag cagccggtgc agattctacc aggtctttag cttctttcag 240
acccaggcca gttgcgccac gtactgcttt gataacagca actttgttag cgccagcagc 300
tttcagaatt acgtcgaatt cagtttttc ttcagcagct tcaaccgggc cagcagctac 360
agctacagca gcagcagcgg aaacacccga atttttcttc cattgcagag atcaagttct 420
acaac 425

<210> 414
<211> 126
<212> DNA
<213> Escherichia coli

<400> 414
agagcttttt tcagtgcttc tgcgtcgtct ttgctcacgc cttctttcag agcagccggt 60
gcagattcta ccaggtcttt agcttctttc agacccaggc cagttgcgcc acgtactgct 120
ttrata 126

<210> 415
<211> 264
<212> DNA
<213> Escherichia coli

<400> 415
ctgcmacccg gargggttgg cttatttaac ttcaacttca gcgccagctt cttycagagc 60
ttttttcaag tgcttctgcg tcgtctttgc tcacgccttc tttcagagca gccggtgcag 120
attctaccag gtctttagct tctttcagac ccaggccagt tgcgccacgt actgctttga 180
taacagcaac tttgttagcg ccagcagctt tcagaattac gtcgaattca gttttttctt 240
cagcagcttc aaccgggcca gcag 264

<210> 416
<211> 201
<212> DNA
<213> Escherichia coli

<400> 416
cgcataccct gcagcatcgg cccgatggag atcaggtcgg cagaacgctg taccgctttg 60
taggtggtgt taccggtgtt cagatccggg aagatgaaca cggtagcgcg acctgcaacc 120
ggagagttcg gcgctttgga tttcgcaacg tcagccatta ccgcagcgtc gtactgcagc 180
ggaccgtcga tcatcaggtc a 201

<210> 417
<211> 239
<212> DNA
<213> Escherichia coli

<400> 417
aattcagcag ttgacagtgg cataaacgta actggtgact tttgcccggc atgacgccgg 60
gctttttta ttattccgtg acttccagcg tagtgaaggc aaacttctcg ccatcaaata 120
gcccctgact ggttagtttt agcgcgggga tcactggcag agaaagaaac gccatctgaa 180
taaacggctc atcgggtaac ggaccgcatt cacgggcggc ggctttcaag gcgtcaatt 239

<210> 418
<211> 223
<212> DNA
<213> Escherichia coli

<400> 418
ttctttttt cgtcaacggt gtccagaatc attttattta cctcgggtac ttatgctgat 60
ttttattatt atggggaagg tgttatttat gagtttcatt tatgccgtaa cgacaatgaa 120
ctcgggaatt agtataagca gcgcgagaat aataatcatt gtgcaaatgc taatttaatt 180
aatactattt aaatattatt ttgagcatat gcacataagg ttg 223

<210> 419
<211> 223
<212> DNA
<213> Escherichia coli

<400> 419
ttctttttt cgtcaacggt gtccagaatc attttattta cctcgggtac ttatgctgat 60
ttttattatt atggggaagg tgttatttat gagtttcatt tatgccgtaa cgacaatgaa 120
ctcgggaatt agtataagca gcgcgagaat aataatcatt gtgcaaatgc taatttaatt 180
aatactattt aaatattatt ttgagcatat gcacataagg ttg 223

<210> 420
<211> 212
<212> DNA
<213> Escherichia coli

<400> 420
aatagcgggt atgcacgcct ttctttttt cgtcaacggt gtccagaatc attttattta 60
cctcgggtac ttatgctgat ttttattatt atggggaagg tgttatttat gagtttcatt 120
tatgccgtaa cgmcaatgaa ctcgggaatt agtataagca gcgcgagaat aataatcatt 180
gtgcaaatgc taatttaatt aatactattt aa 212

<210> 421
<211> 438
<212> DNA
<213> Escherichia coli

<400> 421
ccctgtaaat tatcgcccgt ggcataaaaa ctgcgtccaa acgccgtctt tgccagcagc 60
caggccataa atgccaccag aattatcgtc aaccaaccaa ttgctgaaac gccaagcagc 120
agcggggcgg agagctgttt cagttcggcg ggtaaccctt caatccattt gccgccagtc 180
cacagcaaca tgatgcctct gtacaaccct aacgtgccaa gggtggcaac aatggcaggg 240
atctttagcc acgcgaccag gacaccgttg aaaaatcccg cgagcaaacc aagcagtaaa 300
gtcgcgacac aagcaacagg tagtgaatat cctgcgttca gtaacatccc caacagcacc 360
gcgcacattc cgggtaatcg aaccccactt gaaacatcaa tattgsgsgt aagcattwcc 420
aagcgttcgs gcccatkg 438

<210> 422
<211> 682
<212> DNA
<213> Escherichia coli

<400> 422
aattcccggg gatccgtcga ccgtgcgctt ccggttgtgg caacccgcga aatggcgcgg 60
cggtaagtat ggcggggtta ttccttcccc gttgaggaca ccgggttgtc aggttgacca 120
tacgcttaag tgacaacccc gctgcaacgc cctctgttat caattttctg gtgacgtttg 180
gcggtatcag ttttactccg tgactgctct gccgcccttt ttaaagtgaa ttttgtgatg 240
tggtgaatgc ggctgagcgc acgcggaaca gttaaaacca aaaacagtgt tatgggtgga 300
ttctctgtat ccggcgttaa ttgttaactg gttaacgtca cctggaggca ccaggcactg 360
catcacaaaa ttcattgttg aggacgcgat aatgaaaacg ttattaccaa acgttaatac 420
gtctgaaggt tgttttgaaa ttggtgtcac tatcagtaac ccagtattta ctgaagatgc 480
cattaacaag agaaaacaag aacgggagct attaaataaa atatgcattg tttcaatgct 540
ggctcgttta cgtctgatgc caaaaggatg tgcacaatga attcagcatt tgtgcttgtt 600
ctgacagttt ttcttgtttc cggagagcca gttgatattg cagtcagtgt tcacaggaca 660
atgcaggagt gatgactgca gc 682

<210> 423
<211> 600
<212> DNA
<213> Escherichia coli

<400> 423
ggggatccga ttgtgactgc tctgccgccc tttttaaagt gaattttgtg atgtggtgaa 60
tgcggctgag cgcacgcgga acagttaaaa ccaaaaacag tgttatgggt ggattctctg 120
tatccggcgt taattgttaa ctggttaacg tcacctggag gcaccaggca ctgcatcaca 180
aaattcattg ttgaggacgc gataatgaaa acgttattac caaacgttaa tacgtctgaa 240
ggttgttttg aaattggtgt cactatcagt aacccagtat ttactgaaga tgccattaac 300
aagagaaaac aagaacggga gctattaaat aaaatatgca ttgtttcaat gctggctcgt 360
ttacgtctga tgccaaaagg atgtgcacaa tgaattcagc atttgtgctt gttctgacag 420
tttttcttgt ttccggagag ccagttgata ttgcagtcag tgttcacagg acaatgcagg 480
agtgtatgac tgcagcaacc gaacagaaaa ttcccggtaa ctgttacccg gtcgataaag 540
ttattcacca ggataatatc gaaatcccgg caggtcttta aacagttccg taataaataa 600

<210> 424
<211> 100
<212> DNA
<213> Escherichia coli

<400> 424
gggatccagc aagaagatgc ggttgtaccg tcatcacgca gatgcgcaaa gctactcagc 60
aactgacctt tcttcgcaat aagcacgcca ttagcgtcat 100

<210> 425
<211> 465
<212> DNA
<213> Escherichia coli

<400> 425
tcgcgtgttt accttcaaca tcggtaactt tctggcggat agtttcacgg taagcaacct 60
gcggtttacc tacgttcgct tcaacgttga attcacgctt catacggtca acgatgatgt 120
cgaggtgcag ttcgcccata cccgcgatga tggtctggtt agattcttcg tcagtccata 180
cacggaaaga cgggtcttct ttagccagac ggcccagagc cagacccatt ttttcctggt 240
cagctttggt tttcggttca actgcgatgg agattaccgg ctcagggaat tccatacgtt 300
ccagaatgat cggcgcatcc gggtcacaca gggtgtcacc agtggttacg tctttcagac 360
cgatagcagc agcgatgtcg cccgcgcgaa cttctttgat ctcttcacgt ttgttagcgt 420
gcatctgaac gatacgaccg aaacgctcac gtgcagcttt cacgg 465

<210> 426
<211> 653
<212> DNA
<213> Escherichia coli

<220>
<221> misc_feature
<222> (1)...(653)
<223> n = A,T,C or G

<400> 426
tgatcggctc aagcagaact ggtttcgctt tcttaaagcc ttctttaaag gcgatagaag 60
cagccagttt aaacgccagt tcagaggagt caacgtcatg gtaagaaccg aagtgcagac 120
gaatacccat gtctactacc gggtagcctg ccagcggacc tgctttcagc tgttcctgga 180
tacctttatc aacggccggg atgtattcgc cagggattac accaccttta atgtcgttga 240
tgaactcgta gcctttcggg tttgaacccg gctccagcgg gtacatgtcg ataacaacat 300
gaccatactg accacgacca ccagactgtt tcgcgtgttt accttcaaca tcggtaactt 360
tctggcggat agtttcacgg taagcaacct gcggtttacc tacgttcgct tcaacgttga 420
attcacgctt catacggtca acgatgatgt cgaggtgcag ttcgccatac ccgcgatgat 480
ggctgggtag attcttcgtc agtccataca cggnaagacg ggtcttnttt agccagacgg 540
gccagagnca gacccatttt tttctggcag ctttggnttc ggtcaactgc gatggaaata 600
cccggctcaa ggaattcata cgtttcanaa tgatcggggc attccgggtc aca 653

<210> 427
<211> 268
<212> DNA
<213> Escherichia coli

<400> 427
ctttcttaaa gccttcttta aaggcgatag aagcagccag tttaaacgcc agttcagagg 60
agtcaacgtc atggtaagaa ccgaagtgca gacgaatacc catgtctact accgggtagc 120
ctgccagcgg acctgctttc agctgttcct ggataccttt atcaacggcc gggatgtatt 180
cgccagggat tacaccacct ttaatgtcgt tgatgaactc gtagcctttc gggtttgaac 240

ccggctccag cgggtacatg tcgataac 268

<210> 428
<211> 330
<212> DNA
<213> Escherichia coli

<400> 428
gttttgggga gatgtaaggg ctaatctgaa tggctgcatt ccttgtttaa ggaaaaacga 60
atgactgatt gccgatacct gattaaacgg gtcatcaaaa tcatcattgc tgttttacag 120
ctgatccttc tgttcttata acacaaggaa acgtacttaa ggtgcgtccg gtgaaccagt 180
cggacgcacc tttaataact ataaataagt gtctgggcag atactatata aattaactta 240
gtgaatgatt atgctaatgt catcaattaa ataaatataa tggcgttaag gcttcccagt 300
aatataatta atactctact tccagagtag 330

<210> 429
<211> 465
<212> DNA
<213> Escherichia coli

<400> 429
gttttgggga gatgtaaggg ctaatctgaa tggctgcatt ccttgtttaa ggaaaaacga 60
atgactgatt gccgatacct gattaaacgg gtcatcaaaa tcatcattgc tgttttacag 120
ctgatccttc tgttcttata acacaaggaa acgtacttaa ggtgcgtccg gtgaaccagt 180
cggacgcacc tttaataact ataaataagt gtctgggcag atactatata aattaactta 240
gtgaatgatt atgctaatgt catcaattaa ataaatataa tggcgttaag gcttcccagt 300
aatataatta atactctact tccagagtag aatattaaat tttatccgcg tggtgcatca 360
gcacaaattt atcccacaac tgttcttctg tctcgacatg cgccggatct ttcacaatag 420
tattggggat cgggcacacc ttctggcagg ttggtgtctc gtagt 465

<210> 430
<211> 379
<212> DNA
<213> Escherichia coli

<400> 430
aatctgaatg gctgcattcc ttgtttaagg aaaaacgaat gactgattgc cgatacctga 60
ttaaacgggt catcaaaatc atcattgctg ttttacagct gatccttctg ttcttataac 120
acaaggaaac gtacttaagg tgcgtccggt gaaccagtcg gacgcacctt taataactat 180
aaataagtgt ctgggcagat actatataaa ttaacttagt gaatgattat gctaatgtca 240
tcaattaaat aaatataatg gcgttaaggc ttcccagtaa tataattaat actctacttc 300
cagagtagaa tattaaattt tatccgcgtg gtgcatcagc acaaatttat cccacaactg 360
ttcttctgtc tcgacatgc 379

<210> 431
<211> 443
<212> DNA
<213> Escherichia coli

<400> 431
aagatgatgt gatgagaaag tcaatttgaa taagacaata ttaagagcta aaaaaatgtc 60
aaaaaacact aaatcaaaaa ataatggcat tagaaaatat aatgcgaaaa cggaggtgaa 120
attagtttat ttcaaatgag gaaaatctcc cggcgaaaaa accgggagat gaaagtgtga 180
tgggtatcaa ataaacaaca gaggagaaat ttttaacgca gccattcagg caaatcgttt 240
aatcccattg cctggcggat aagttgcggc ttaacgccag gaagcgtgtc ggccagtttc 300
aaaccaatat cacgcagcag ttttttcgcc ggattggtac cggaaaacag atcgcggaat 360
ccctgcatac cagccagcat caacgccgca ctgtgcttgc ggctacgctc atagcgacgc 420

agataaatgt actgcccgat gtc 443

<210> 432
<211> 638
<212> DNA
<213> Escherichia coli

<400> 432
caggggttt gttgtgggca atgatgcatt taagttatcg tctgcagata gaggagatat 60
tacaataaac aacgaatcag ggcatttgat agtcaatacc gcaattctat caggagatat 120
agtcactcta agaggaggag aaattaggtt ggtattatag cttgtgcgcg ccatgattgg 180
cgcgcaattt aaacttagtg ctttacatcg ctattgtctt gatttctttg aattatttta 240
taaattaaaa aaacgactgt tatgtataag caaaggtccg aacgaaaaat acattccaaa 300
taaatgcttg cttaaatctc tatatccttc cccgaaaaat gacacataaa attgagatat 360
tccaaaaaga gatactacaa ataaagatgc ctttatttta ttatttctaa taaaaataga 420
agcaataaaa aataataaca atgatataaa tctaatgttt ttaaatatat tgtcttttat 480
gttagtaata gtcgttagta tgtttgattc tccatatatt acgtgtagtt ttttatatac 540
atggaaataa ttttctttat actgagacat cacaccatca tcaaatggaa gtttgaagat 600
ggtgcttggt ttgctaacca ataaaaagag tgcattcg 638

<210> 433
<211> 299
<212> DNA
<213> Escherichia coli

<400> 433
ctttacctgg catgatccac ttcgccagaa taccggcaat aagcccaaaa ataatccatg 60
acagaatgcc cattgtttcc tcacttatct gttttgcatt agcgggttag tcgctgataa 120
aaagcatagc acaacatcgg gagggcaaga tttgtgacga gcatcacgga ggtttttttg 180
cgatggcgca gaaattgcgc catcaacgat cagtgataat taccaaccac aaacatcatg 240
ttcgttttcc gtgtcataag aacgtacggt attcaccaga tcttttatca cttcagccg 299

<210> 434
<211> 388
<212> DNA
<213> Escherichia coli

<400> 434
gaaaaaggag gcaatatcgg gtaaaggcat tagcccgacg aatacgtcgg gctacaaata 60
ttattgtgct gcaggtgttt tagcgggttg ttgatccaca ggttctaact ggaagaccac 120
atcgacctga tcatcaaact gaatagcggc ctgctcgtaa gtttcctggg cggacaccgg 180
cgcggcatcg gctttcatca tccgcaccat tgggctgggc tgatagttgg aaacatggta 240
gcgcacgcta tataccggcc ccagtttacg atgaaagccg ttcgccagtt cctgcgcctg 300
atgaatcgcg ttatcaatcg ctgccttacg cgctttgtct ttataggcat ccggctgcgc 360
cacgcccagc gacacagaac gaattccc 388

<210> 435
<211> 351
<212> DNA
<213> Escherichia coli

<400> 435
ctatccttga tgaaaccgcg agcaaagata ggtgattacg tcatggtttt acagaaaatt 60
acagaaaaag gaggcaatat cgggtaaagg cattagcccg acgaatacgt cgggctacaa 120
atattattgt gctgcaggtg ttttagcggg ttgttgatcc acaggttcta actggaagac 180
cacatcgacc tgatcatcaa actgaatagc ggcctgctcg taagtttcct gggcggacac 240
cggcgcggca tcggctttca tcatccgcac cattgggctg ggctgatagt tggaaacatg 300

gtagcgcacg ctatataccg gccccagttt acgatgaaag ccgttcgcca g 351

<210> 436
<211> 762
<212> DNA
<213> Escherichia coli

<220>
<221> misc_feature
<222> (1)...(762)
<223> n = A,T,C or G

<400> 436
aattatgaaa cactgtctgg aatcgtctga atgacgggca catttgcgag cacgcatcca 60
gtaataacac aggaaactat tttatctacg cgttagcgat agactgcttg catggcgaaa 120
ggaggtaagc cgacgatttc agcgggacgc tgaaacggga aagcccctcc cgaggaaggg 180
gccataaata aggaaagggt catgatgaag ctactcatca tcgtggtgct cttagtcata 240
agcttccccg cttactaaga ctaccagggc gggggaaacc ccgctctacc ctcactcctg 300
aaagtatgcc ttcacgataa gattgtcaat ccgcaggctt tgtagtctgc gatcctgcca 360
gcaaatattc tttgcgagtc gttacgcaat aatcacagag gaaactattt tattcacgcg 420
ttagcgatag actgcattca gggcgaaagg aggtaagccg atgatttcag cgggacgctg 480
aaacgggaaa gcctctcccg gagaagaggg cttttaataa ggaaagggtt atgatgaagc 540
acgtcatcat actggtgata ctcttagtga ttagcttcca ggcttactaa gaacaccagg 600
gggaggggga aacctcttcc taaccctcac ttctgaaatt gggtgctatg acgctggcgt 660
tactgcttan cgctaccagt ttgtctgccc tggcggttgt aacgccagat cggtacccgt 720
ttggatattt taatgaaagc cgacaaatca atcancgtga cg 762

<210> 437
<211> 292
<212> DNA
<213> Escherichia coli

<400> 437
cacatttgcg agcacgcatc cagtaataac acaggaaact attttatcta cgcgttagcg 60
atagactgct tgcatggcga aaggaggtaa gccgacgatt tcagcgggac gctgaaacgg 120
gaaagcccct cccgaggaag gggccataaa taaggaaagg gtcatgatga agctactcat 180
catcgtggtg ctcttagtca taagcttccc cgcttactaa gactaccagg gcgggggaaa 240
ccccgctcta ccctcactcc tgaaagtatg ccttcacgat aagattgtca at 292

<210> 438
<211> 631
<212> DNA
<213> Escherichia coli

<400> 438
atttacactt tttacgaaat catgggatca ctaacaaaat atcgcttgtc agttatattg 60
tatggcagga aagatatgcg actgatatta cagatcccca aagtggagag tttatgacca 120
ttaaaaataa gatgttgctg ggtgcgcttt tgctggttac cagtgccgcc tgggccgcac 180
cagccaccgc gggttcgacc aatacctcgg gaatttctaa gtatgagtta agtagtttca 240
ttgctgactt taagcatttc aaaccagggg acaccgtacc agaaatgtac cgtaccgatg 300
agtacaacat taagcagtgg cagttgcgta acctgcccgc gcctgatgcc gggacgcact 360
ggacctatat gggtggcgcg tacgtgttga tcagcgacac cgacggtaaa atcattaaag 420
cctacgacgg tgagattttt tatcatcgct aaaaaaagcc ccctcatcat gaggggggaaa 480
tgcagacacc ttgttatttt ttattattag ccacttgctc gtcttgcttg ttattagtcg 540
tatttcacgt tgattaatgc ggttgcctcc agtgcgccag atttaacttt gtttgtatcg 600
tagacgtagt aactggctgt tatcggaatt g 631

<210> 439
<211> 566
<212> DNA
<213> Escherichia coli

<400> 439
tatggcagga aagatatgcg actgatatta cagatcccca aagtggagag tttatgacca 60
ttaaaaataa gatgttgctg ggtgcgcttt tgctggttac cagtgccgcc tgggccgcac 120
cagccaccgc gggttcgacc aatacctcgg gaatttctaa gtatgagtta agtagtttca 180
ttgctgactt taagcatttc aaaccagggg acaccgtacc agaaatgtac cgtaccgatg 240
agtacaacat taagcagtgg cagttgcgta acctgcccgc gcctgatgcc gggacgcact 300
ggacctatat gggtggcgcg tacgtgttga tcagcgacac cgacggtaaa atcattaaag 360
cctacgacgg tgagattttt tatcatcgct aaaaaaagcc ccctcatcat gaggggggaaa 420
tgcagacacc ttgttatttt ttattattag ccacttgctc gtcttgcttg ttattagtcg 480
tatttcacgt tgattaatgc ggttgcctcc agtgcgccag atttaacttt gtttgtatcg 540
tagacgtagt aactggctgt atcgaa 566

<210> 440
<211> 339
<212> DNA
<213> Escherichia coli

<400> 440
cgtattcaca tccttttgat tggtgataac atgcgaatcg gtattatttt tccggttgta 60
atcttcatta cagcggtcgt atttttagca tggtttttta ttggcggcta tgctgccccg 120
ggagcataaa gatgaaaaaa acaacgatta ttatgatggg tgtggcgatt attgtcgtac 180
tcggcactga gctgggatgg tggtaacgtc acctctaaaa aatagcaaag gctgcctgtg 240
tgcagccttt gtgcaattta agcgttaact tttaatcttc ctgtagataa atagcacgac 300
aatcgcacca ataacggcaa ccacgaagct gccaaaatt 339

<210> 441
<211> 376
<212> DNA
<213> Escherichia coli

<400> 441
catgaatatt taaaaaggaa aacgacatga aaccgaagca cagaatcaac attctccaat 60
cataaaatat ttccgtggag cattttatta ttgaatatag aggtttaact ccggtaaaaa 120
acaaagaagc attgaatgca gggaaaaata atatggccat aaaaaacatc gaaagaaact 180
cttttaattt aacatgtaaa cgcatggtta atcctcatat cacgggtgga gtgttaagaa 240
catacataaa tggagtcatg ttttcccttt tccatttatc aagttcctgt tgccgtttta 300
gtccatctct aattgcatat tttaattttt ctgataaatg gcattgagca tcgatttcat 360
ttaaaacaac tgtaca 376

<210> 442
<211> 446
<212> DNA
<213> Escherichia coli

<400> 442
ttacgatagc tattagtaaa aatataagag ttagctgtat tgttatgtct gtggcgaaat 60
tgactacctt cgttttttg attaagaatg attttattat cgtaagtaaa attacatgaa 120
tatttaaaaa ggaaaacgac atgaaaccga agcacagaat caacattctc caatcataaa 180
atatttccgt ggagcatttt attattgaat atagaggttt aactccggta aaaaacaaag 240
aagcattgaa tgcagggaaa aataatatgg ccataaaaaa catcgaaaga aactctttta 300
atttaacatg taaacgcatg gttaatcctc atatcacggg tggagtgtta agaacataca 360
taaatggagt catgttttcc cttttccatt tatcaagttc ctgttgccgt tttagtccat 420

ctctaattgc atattttaat ttttct 446

<210> 443
<211> 388
<212> DNA
<213> Escherichia coli

<220>
<221> misc_feature
<222> (1)...(388)
<223> n = A,T,C or G

<400> 443
tcaccccggt gccgattttc aggcatcctg atttaactta gcacccgcaa cttaactaca 60
ggaaaacaaa gagataaatg tctaatcctg atgcaaatcg agccgatttt ttaatcttta 120
cggactttta cccgcctggt ttattaattg cactgtnatc cgggcgttcg cccgctttaa 180
tcacaatagg ctgtgtagcc tgggcctgtt tctctttcac ccgcgccaga gcggcagcaa 240
tcgcatcttt atctttggct gcaggttgaa cggctgcgct cttatgtcgt tcaaggcgag 300
ccgctttttc gcgctccaga cgagcctggc gcgcttcgaa acgcgctttg gcttctgcgg 360
cncgcttttc ttcctgacga atagccgc 388

<210> 444
<211> 209
<212> DNA
<213> Escherichia coli

<400> 444
aattttaata acgctatctg cggataaagc agaataggtg gttaacccca gacataaacc 60
gaggaaaata atgttattgt atttcataat ctattgttcc ttagcgacag attgctgtct 120
gctggttcag taaggtacca ggagaaactt caggaagctt gtactcgaca atacagtttg 180
agtttttatc tttgccccat gaaacctgt 209

<210> 445
<211> 341
<212> DNA
<213> Escherichia coli

<400> 445
catcctcaat accgttaaat gcaacccgaa cccccgttgt ccctttgctg cattcactta 60
acgtaatctg aaaagggacg gctggacttg tgctaccggt cgttggaaat tgtctggcac 120
tgtttttttg gagatctacg gtaaaattaa gcgaatccga tgagactgtg cagccataat 180
cgaggacgcg cccgctaatt ttaataacgc tatctgcgga taaagcagaa taggtggtta 240
accccagaca taaaccgagg aaaataatgt tattgtattt cataatctat tgttccttag 300
cgacagattg ctgtctgctg gttcagtaag gtaccaggag a 341

<210> 446
<211> 697
<212> DNA
<213> Escherichia coli

<400> 446
agatttactg ccaatttccg gcagatcgga aagggttaam ccatattgat ccataagggt 60
acgaatcmcg ggctataccg ccaggcatgg cttgagccat ggcattaaat tccgcaaatt 120
cgggcgctga ttcttcccac gcggttattt tggcacacac cagatccagc aaggggtttt 180
caggatcgtt gagcagcaga tgatctacca gttccagcgc ctgggtgtat tgttcctcgt 240
tctgaatacc cgccagaaaa ggtgccacag cagttagctt ttctcctgct tgcaagatgt 300
cggcaatcgc aatcattttt tccccttagt acgatgaaca gcggtaaaga aatcgtattc 360

tttatgcgtc ataacttcac gtatgtagca cttttgcgat tcaaaaaaga ccattgctac 420
aacacgtaat tcattgcccc caacattgaa aacataatgc ttatccagat atttgaagtt 480
atccagagat gggaatactg cttttaatga ctcaggtttt ttgaaatatc ccttagcaat 540
cgtgktcccc agagccacca actccgtttt atgttgcggg tatttttccg cagcatcttt 600
caatgctttt tgagttatca ggtgcattct tcatcacgtc cgtkgmcaaa ttggcaatat 660
gataacatcc gttgccagat tggcacggat gaattat 697

<210> 447
<211> 215
<212> DNA
<213> Escherichia coli

<400> 447
aattaataac ttttcgttag gcagttttgg gtgtgagttg caagagggga gactactgaa 60
taactcaagt tttataatcg aggggaaaat ggtgatggcg ttcatagcaa aacgccctca 120
accataaagg tcgagggcgc ttaagatgtt aaaaacccgc tatccgttaa aaaacaatgt 180
tcaactaagg tcagtgacat tgcgctaaaa aagcg 215

<210> 448
<211> 395
<212> DNA
<213> Escherichia coli

<400> 448
gcattattca tgagaaatgt gtatcgtaaa tcaactgaaa ttaacgcaac catttgttat 60
ttaaggttta attatctgtg tgtgatattt tattgaatgt tttaaatatt gtttttattg 120
gcattgctat aatattggtt atcatttgct gaatggattc agtcttaatg agtgggtttt 180
taagggacag gcatagagta atgatacgta tgcataacca acatctttac tcattatgtc 240
attgaatgtt gacgctatgt gtttatgagg gagaggtatt ttcagttgat ctggattgtt 300
aaattcatat aatgcgcctt tgctcatgaa tggatgccag tatgtagtgg gaaattataa 360
atattgaaat agtccaacta cttctttatt accaa 395

<210> 449
<211> 641
<212> DNA
<213> Escherichia coli

<220>
<221> misc_feature
<222> (1)...(641)
<223> n = A,T,C or G

<400> 449
ataatcaggt aagaaaaggt gcgcggagat taccgtgtgt tgcgatatat tttttagttt 60
cgcgtggcaa tacatcagtg gcaataaaac gacatatcca gaaaaatata cactaagtga 120
atgatatctt ccgatttatc ttaatcgttt atggataacg gcaaagggct tcgtttttc 180
ctatacttat tcagcactca caaataaagg aacgccaatg aaaattatac tctgggctgt 240
attgattatt ttcctgattg ggctactggt ggtgactggc gtatttaaga tgatatttta 300
aaattaatta atgtcatcag gtccgaaaat aacgagaata tttcagtctc tcatcctgtt 360
gcgctcctgt catgtgcatt gcttcatata atcactggcg caaggagcgc cgcaggcgna 420
gnntgcncgn cgncccacct naccccatgc cgaacttcag aantgaaaac nccntaacnc 480
cgatngtcgg cgggngcctc cccatgcnan agtangggaa ntgccangcg ncnnattaaa 540
cgaaaggctn attncaaaga ctgggccttn cntttatctg atgtttgtcg gagaacgctc 600
tcctgagnan gacaaatncc gccgggagcg gatttgaacn t 641

<210> 450
<211> 314

<212> DNA
<213> Escherichia coli

<220>
<221> misc_feature
<222> (1)...(314)
<223> n = A,T,C or G

<400> 450
gaactacgag taagaatagc tncgaattcc cgtttatgga taacggcaaa gggcttcgtt 60
ttttcctata cttattcagc actcacaaat aaaggaacgc caatgaaaat tatactctgg 120
gctgtattga ttattttcct gattgggcta ctggtggtga ctggcgtatt taagatgata 180
ttttaaaatt aattaatgtc atcaggtccg aaaataacga gaatatttca gtctctcatc 240
ctgttgcgct cctgtcatgt gcattgcttc atataatcac tggcgcaagg agcgcgcagg 300
gggntntnnt cttt 314

<210> 451
<211> 236
<212> DNA
<213> Escherichia coli

<400> 451
atatacacta agtgaatgat atcttccgat ttatcttaat cgtttatgga taacggcaaa 60
gggcttcgtt ttttcctata cttattcagc actcacaaat aaaggaacgc caatgaaaat 120
tatactctgg gctgtattga ttattttcct gattgggcta ctggtggtga ctggcgtatt 180
taagatgata ttttaaaatt aattaatgtc atcaggtccg aaaataacga gaatat 236

<210> 452
<211> 418
<212> DNA
<213> Escherichia coli

<400> 452
cggagattac cgtgtgttgc gatatatttt ttagtttcgc gtggcaatac atcagtggca 60
ataaaacgac atatccagaa aaatatacac taagtgaatg atatcttccg atttatctta 120
atcgtttatg gataacggca aagggcttcg ttttttccta tacttattca gcactcacaa 180
ataaaggaac gccaatgaaa attatactct gggctgtatt gattattttc ctgattgggc 240
tactggtggt gactggcgta tttaagatga tattttaaaa ttaattaatg tcatcaggtc 300
cgaaaataac gagaatattt cagtctctca tcctgttgcg ctcctgtcat gtgcattgct 360
tcatataatc actggcgcaa ggagcgcgca gggggcggcc aatcgccgcc gccccctg 418

<210> 453
<211> 551
<212> DNA
<213> Escherichia coli

<400> 453
aacaatttgc ccatgcgctc ggtcatgcgc tgcatcgccc ggccattttg sgcgtccccg 60
cgaccgccat tcgactgtta atgggcgaat cttcagtact ggtattaggt ggacaacgcg 120
cgctgcctaa acggctggaa gaagcgggtt ttgcgtttcg ctggtacgat ttagaagagg 180
cgctggcgga tgtcgttcgc tgatgtggtt tacagcaaac atccgccagt taactcccgg 240
tgttacagga ttagtggctt tgcgcgataa gatcgtctgg tgaaagtcgg gtcaccatca 300
taactaactc tctgtctaaa cctctatcca gcatctcctg agcaatacgc agggcttctt 360
cgtgtttgcc ctgcattgcg ccttcttcac gtaatctgtc agcaatggtc atcaagtttc 420
tccttttctt gtggtgcgcg ttccgctatc tcaccaataa atgcacgaaa acgctgggca 480
tcccctgttt gtaatacgta attaaacagg gcttttagct gtctgtcatt agtgktccct 540
gtaactagca g 551

<210> 454
<211> 93
<212> DNA
<213> Escherichia coli

<400> 454
tggcatctcg gtgttgccga tcttcatgat atccagcccg ccggaaactt cttcccaaac 60
ggttttgctg ttatccattg agtcacggaa ctg 93

<210> 455
<211> 232
<212> DNA
<213> Escherichia coli

<400> 455
cgtgccgaga tgatcctgta accatcatca gttgtgaagt agtgattcac gacttcaagg 60
cgcttttcaa aagggtattt tggctttgac atattagggg ctattccatt tcatcgtcca 120
acaaaatggg tgcagtacat actcgttgga aatcaacaca ggaggctggg aatgccgcag 180
aaatatagat tactttcttt aatagtgatt tgtttcacgc ttttatttt ca 232

<210> 456
<211> 713
<212> DNA
<213> Escherichia coli

<220>
<221> misc_feature
<222> (1)...(713)
<223> n = A,T,C or G

<400> 456
ttagnggatn naangcccac ancctcgang gatctaggag gtagaatagc ttcgaattcc 60
ccagcagagc gcggccttct tcgtcagatt tcgcagtagt ggtaatggta atatccaaac 120
cacgaacgcg gtcgacttta tcgtagtcga tttctgggaa gatgatctgc tcacggacac 180
ccatgctgta gttaccacga ccgtcgaaag acttagcgga caggccacgg aagtcacgga 240
tacgaggtac agcaatagtg atcaggcgct caaagaactc ccacatgcgt tcgccacgca 300
gagttacttt acagccgatc ggatagccct gacggatttt gaagcctgca acagatttgc 360
gtgctttggt gatcagcggt ttttgaccgg agattgctgc caggtctgct gctgcgttat 420
ccagcagttt tttgtcagcg atcgcttcac caacacccat gttcagggtg atcttctcga 480
cccgagggac ttgcatgaca gaattgtagt taaactcagt catgagtttt ttaactactt 540
cgtctttgta gtaatcatgc agtttcgcca tcgtactact ccatgtcggt gaacgctctc 600
ctgagtagga caaatccgcc ggagccggat ttaacgttgc gaacaaccgn cccggagggg 660
tggnggcagg accccgccat aactggcagc attaaattaa gcagaaggcc atc 713

<210> 457
<211> 292
<212> DNA
<213> Escherichia coli

<400> 457
tgaacagcag agatacggcc agtgcggcca atgtttttg tcctttaaac ataacagagt 60
cctttaagga tatagaatag gggtatagct acgccagaat atcgtatttg attattgcta 120
gtttttagtt ttgcttaaaa atattgttag ttttattaaa tgcaaaacta aattattggt 180
atcatgaatt tgttgtatga tgaataaaat atagggggtt atagatagac gtcattttca 240
tagggttata aatgcgacta ccatgaagtt tttaattgaa agtattgggt tg 292

<210> 458
<211> 282
<212> DNA
<213> Escherichia coli

<400> 458
ttattaaatg caaaactaaa ttattggtat catgaatttg ttgtatgatg aataaaatat 60
agggggggtat agatagacgt cattttcata gggttataaa tgcgactacc atgaagtttt 120
taattgaaag tattgggttg ctgataattt gagctgttct attcttttta aatatctata 180
taggtctgtt aatggatttt atttttacaa ttttttgtgt ttaggcatat aaaaatcaac 240
ccgccatatg aacggcgggt taaaatattt acaacttagc aa 282

<210> 459
<211> 300
<212> DNA
<213> Escherichia coli

<400> 459
tctgcgttcc gctaaaaggt gcaaatgctc aggacgttgc agcgttttgc gtgaccgctc 60
ggggaaggca aaattgcctc tgggaaagca ttgcgcgggg tccggcgctc atcaacaatc 120
ggggggcagc aaggggctga aacgggaaag cccctcccga agaaggggcc ttgtataagg 180
aaagggttat gatgaagctc gtcatcatac tggttgtgtt gttactgtta agtttcccga 240
cttactaaca actcatcaga ggggggagaa atcctccctt acccttgttc ctttactcta 300

<210> 460
<211> 293
<212> DNA
<213> Escherichia coli

<400> 460
cggggtccgg cgctcatcaa caatcggggg gcagcaaggg gctgaaacgg gaaagcccct 60
cccgaagaag gggccttgta taaggaaagg gttatgatga agctcgtcat catactggtt 120
gtgttgttac tgttaagttt cccgacttac taacaactca tcagaggggg gagaaatcct 180
cccttaccct tgttccttta ctctaggttg aaaaaacaac agcgtcaata ggcctgccat 240
gtacgaagcg agatctgtga accgctttcc ggttagcctt ttttatcctg ttg 293

<210> 461
<211> 359
<212> DNA
<213> Escherichia coli

<400> 461
caacacagga ggctgggaat gccgcagaaa tatagattac tttctttaat agtgatttgt 60
ttcacgcttt tatttttcac ctggatgata agagattcac tgtgtgaatt gcatattaaa 120
caggagagtt atgagctggc ggcgttttta gcctgcaaat tgaaagagta agagtcttcg 180
gcgggaaatt attcccgcct tacttacggc gttgcgcatt ctcattgcac ccaaatttat 240
tcttcacaaa aataataata gattttatta cgcgatcgat tatttatttc ctgaaaacaa 300
ataaaaaaat ccccgccaaa tggcagggat cttagattct gtgcttttaa gcagagatt 359

<210> 462
<211> 673
<212> DNA
<213> Escherichia coli

<400> 462
gcaacccatg tcctgacctg ggttcggggg acaccaaaac gtgccgagat gatcctgtaa 60
ccatcatcag ttgtgaagta gtgattcacg acttcaaggc gcttttcaaa agggtatttt 120

ggctttgaca tattaggggc tattccattt catcgtccaa caaaatgggt gcagtacata 180
ctcgttggaa atcaacacag gaggctggga atgccgcaga aatatagatt actttcttta 240
atagtgattt gtttcacgct tttatttttc acctggatga taagagattc actgtgtgaa 300
ttgcatatta aacaggagag ttatgagctg gcggcgtttt tagcctgcaa attgaaagag 360
taagagtctt cggcgggaaa ttattcccgc cttacttacg gcgttgcgca ttctcattgc 420
acccaaattt attcttcaca aaaataataa tagattttat tacgcgatcg attatttatt 480
tcctgaaaac aaataaaaaa atccccgcca aatggcaggg atcttagatt ctgtgctttt 540
aagcagagaa tacaggctgg ttacgttacc agctgccggg cctttagcgc cgctttcgat 600
ggtgaaggac actttctgac cttcgtccag agatttgtaa ccatcgttct ggatagcaga 660
gaagtgtacg aac 673

<210> 463
<211> 630
<212> DNA
<213> Escherichia coli

<400> 463
tggtggcatt ggttgctgga gagagaaaac ccccgcacgt tgcaggtatg cacctgacaa 60
caccacgggg gctaatcttg actctagacc actcaagaat agccgcgaaa cgttgtcatt 120
acaacacagg cggctatatg acgttcgcag agctgggcat ggccttctgg catgatttag 180
cggctccggt cattgctggc attcttgcca gtatgatcgt gaactggctg aacaagcgga 240
agtaacgtgt catgcgggcg tcaggctgcc gtaatggcaa tttgcgcccg gaccaggccg 300
caggggggaa actctgcggc ctttttcgtt cttactgcgg gtaaggcacc cagtcgccgc 360
cgttcaggcg aacgtacggt ttatcctggt attgaataac tactgcattt gagttctcgg 420
agaccggtgc tgtttgtggc aacccactgg tgagtttttt ccagtcaaca ttgtcttcgg 480
tgaaaatctt gccatcgaga acgcgaacca ccagatcgga gatagccagg aagctgctcg 540
gttgttcgat gacaatcggt gccccctgat gcggtgcctt catgccgaag aatttcaccc 600
caacggggac gtcggtgata gacgggctag 630

<210> 464
<211> 391
<212> DNA
<213> Escherichia coli

<400> 464
ctcaggctgc tgattgtttt tttgtgcaat ggcgcggtat tagcgtcgtt gctgtcgatg 60
gagagaatca taaacgtggt gaatgatgat tgttagcaag gaaaactgtc aaaaatcttc 120
aaaaaatttg agggataagg ccggaatggc tccggccaga gggaagttaa ccgcgaagct 180
gttgctgctt gagggtcgtt ttaaccagac gccaggcgct ccatacgcca aaaccgcgtc 240
tggcccagcg gaccagcata ttaggatggc gaatcgtcca gatcgccatc acgctactgc 300
caaccagcgc ccaggagcgc agacttagca gcatattcca gcgacgatcg taagcgcctg 360
ttgtctccag ccattcacga cgactggcgg a 391

<210> 465
<211> 625
<212> DNA
<213> Escherichia coli

<400> 465
aacacaccac accataaacg gaggcaaata atgctgggta atatgaatgt tttaatggcc 60
gtactgggaa taattttatt ttctggtttt ctggccgcgt atttcagcca caaatgggat 120
gactaatgaa cggagataat ccctcaccta accggcccct tgttacagtt gtgtacaagg 180
ggcctgattt ttatgacggc gaaaaaaaac cgccagtaaa ccggcggtga atgcttgcat 240
ggatagattt gtgttttgct tttacgctaa caggcatttt cctgcactga taacgaatcg 300
ttgacacagt agcatcagtt ttctcaatga atgttaaacg gagcttaaac tcggttaatc 360
acattttgtt cgtcaataaa catgcagcga tttcttccgg tttgcttacc ctcatacatt 420
gcccggtccg ctcttccaat gaccacatcc agaggctctt caggaaatgc gcgactcaca 480

cctgctgtca cggtaatgtt gatatgccct tcagaatgtg tgatggcatg gttatcgact 540
aactggcaaa ttctgacacc tgcacgacat gcttcttcat cattagccgc tttgacaata 600
atgataaatt cttcgccccc gtagc 625

<210> 466
<211> 623
<212> DNA
<213> Escherichia coli

<400> 466
tgcttttgaa tatgtgctcg caatcttgag aaggaaatgg cgaccacgaa agaaaaggca 60
aaaacgataa tctgaaagag ccaaggtatt tcagtataag cattgaatgc gacagtaaac 120
tctttcggta tcagccagag agtgagacca aaaatgataa tcgtatacat aagtctttcg 180
agtggctcgt tagcaaaaag tttcaacaat ggagtaaata catccaacat atcaataact 240
ctcaactgta agggtattga aatgttaaca caagctctcg ctgtaggggt atagccgaga 300
ccaccgaagc ccggaggtgg tgaaataaaa ccgggcacaa cacgaaggcg catttccgat 360
atccataaag agtcggtctt gtctgttaaa tttaaatggt gggagtgcgc ctccggttgt 420
aaataacgac attgctgtgt gtagtcctgg cggcatcagt ttttttcttg aagttcggct 480
gatgtccgcc ctttttaaag tgaattttgt gatgcggtga atgcggctaa gcgcacgtgg 540
cacagttaaa agtcatgtta gtccttattg gtttgggtgg gaaagccgac tgtaattgtt 600
aactggttgc agtcacctgg agg 623

<210> 467
<211> 234
<212> DNA
<213> Escherichia coli

<400> 467
tgtttactta caagagattc atctttgtat aaataaagat aagtaattac gcataaaaca 60
acaatgatta taatagcaaa aataaatatt atcatctttg atagattact tgagatagcc 120
agcatcttgt aaagccttta tcgtttttt atgctctgga ttaatataat cactacatct 180
atctgagcaa tctgttgttg atggacatgt caacccatgg tcatttacag ccaa 234

<210> 468
<211> 529
<212> DNA
<213> Escherichia coli

<400> 468
attagctatt tcggctaaaa tagagactac atgtcttcgg tccatctcac ttaaggagtg 60
tagttccgtt gtaagttttt ccatagcttg cactgctaaa tttcgaacaa ggaattttct 120
gctggtaatc tctaaaaaga tggcatggtt tacaatgatt tttgtttcct tttgattatt 180
atgaacaact gtccatgatt tcgtttaaga atgaagagaa atcactaaac gaactgaata 240
tattttctgt gccaatatta tctctaattt caaaaaagtt acttttaatg tcggtaatga 300
ctccaactta ttgatagtgt tttatgttca gataatgccc gatgactttg tcatgcagct 360
ccaccgattt tgagaacgac agcgacttcc gtcccagccg tgccaggtgc tgcctcagat 420
tcaggttatg ccgctcaatt cgctgcgtat atcgcttttc cttatcagtt cgttgatgtc 480
agtggttttg accacgaggg agcttcacgc gagttattga aaaccctga 529

<210> 469
<211> 261
<212> DNA
<213> Escherichia coli

<400> 469
caaagaacct tcaacatgaa aaatatccat ttgtttgcaa aaaaagatta ttaggaagga 60
aattaatgca attatcgaaa attcaaaaaa tatccaaaaa tagtatactt tattccagaa 120

gagttcaata taatgtttgt cttcaatttt tcttacttca gggtaatata gattgctcat 180
tacattgtga gcttcatctt tatttaattt tctgttgact ccagctctcc gtgataacgg 240
ttttataatt agatgcttat c 261

<210> 470
<211> 98
<212> DNA
<213> Escherichia coli

<400> 470
agatgattgc cgggaacttg ttagcggcac gcaggcggcg gctcgcaccc ttaccctgct 60
ctttacgtac ttctgcgttg atagtaaaca tttctttc 98

<210> 471
<211> 259
<212> DNA
<213> Escherichia coli

<400> 471
agcgcgaacg aagtcgatgt gctgcagctt cggtttgtac gggtgacgct gtacgtcctg 60
agctttaact ttgatttctt taccgtcaac aacgatggtc agaacttcgc tgtagaattc 120
agctttagct tgcatgttca tgactttgtc gtgatccagc tcgatagcca gcggcgcttc 180
tttgccaccg tagatgattg ccgggaactt gttagcggca cgcaggcggc ggctcgcacc 240
cttaccctgc tctttacgt 259

<210> 472
<211> 94
<212> DNA
<213> Escherichia coli

<400> 472
aaaaacggcg taaagaaagg atgcaaacat gttaataaaa actcaaattg atcccacgta 60
tatattacgc cgcaaaatcc ttacaataaa cagg 94

<210> 473
<211> 174
<212> DNA
<213> Escherichia coli

<400> 473
ttaattatta aaatagtgta acgcgattat gtggttatgg gggtaaacat taaataaacc 60
agcggggagg ggaggtaaag tgaaaaaata aaaagcggat aatcttaata agcaggccgg 120
acagcatcgc catccggcac tgatacgagg tttatttcag ctcatcaacc atcg 174

<210> 474
<211> 138
<212> DNA
<213> Escherichia coli

<400> 474
ctgtaaaaac gtcaaaaaga gtgttttatc aacagaagaa tggaggtctg acagatagta 60
gtaatgcaaa aaaatggaga cttaagttga atgaacggga gtaaagcgaa aagactatag 120
agtgaaggag aaattccc 138

<210> 475
<211> 191
<212> DNA

<213> Escherichia coli

<400> 475
tttgttggct taatattcta ttgttatctt tatttataga tgtttatatt gcatgaggtg 60
gtttttggag agaagaatga ggaagatgcg tcgagccaca gaaacgttag ctttacatat 120
agcggaggtg atgtgaaatt aatttacaat agaaataatt tacatatcaa acagttagat 180
gctttttgtc g 191

<210> 476
<211> 245
<212> DNA
<213> Escherichia coli

<400> 476
cggccattta tacaggaaaa gcctatgtca gaacgtaaaa actcaaaatc acgccgtaat 60
tatctcgtta aatgttcctg cccaaactgc acccaagagt cagaacacag tttttcaaga 120
gtacaaaaag gtgccctttt gatctgccct cattgcaaca aagtattcca gacaaatctt 180
aaagctgtag cctgattgat tttattagta acaagtattt tttatatttt aataatatat 240
ttaaa 245

<210> 477
<211> 319
<212> DNA
<213> Escherichia coli

<400> 477
aaattttcag gtaccttgtc accatacttt tttttctgag cattaatgat attttgagct 60
tcttgaggat ctttaactcc ccacatttgg tggaaagtat tcatattaaa aggaaggttg 120
aataatttgt ctttataaat cgccagtgga gaattagtaa aacgattaaa ttctactaaa 180
tcattaacgt aatcccatat atatttatca ttggtatgaa aaatatgtgc accatattta 240
tgaatctgga taccctcaca gtcctctgtg tacgcatttc caccgatatg atttcttttc 300
tcaatcacta aaacttttt 319

<210> 478
<211> 149
<212> DNA
<213> Escherichia coli

<400> 478
gcagtgatcg aagcgatgac gaagtgtatg gaaaaatcag aaaaactcag caaatcctga 60
tgactttcgc cggacgtcag gccgccactt cggtgcggtt acgtccggct ttctttgctt 120
tgtaaagcgc caaatctgcc gatttcaac 149

<210> 479
<211> 330
<212> DNA
<213> Escherichia coli

<400> 479
gaaagtatct tcgttattga catcactgga aaatataact tgcttttcat tattaaactc 60
gaagcgcgta ccgtatctgg acaaacattt atcgagctta ccaaattcct gaagaggttt 120
aactacagat aacatttgcg cgtcctttgc agtaatgccc gtcaaatcct tgacgggcat 180
tatttagatt aaattaccag tatttcttcg gagtgaagaa tattaccagg tatatttaac 240
acccacgttc gcggaccagt cttgatctac gtcaccacca ccgaggtagt tagcatcggt 300
ataggcgctg aagttcttgg tgaagctaaa 330

<210> 480

<211> 191
<212> DNA
<213> Escherichia coli

<400> 480
ttttttttcca gcaacggagc aaaaggtttg cccttgtgca gctcagggtt aaccacttta 60
actacgtggc gacgacccgg agatgtcggt ttacatttaa caactgccat tgtattactc 120
ctccgactta ctcagcgccg ccaacgaagt ccagattctg gccttctttc agggtgacgt 180
aagctttttt c 191

<210> 481
<211> 188
<212> DNA
<213> Escherichia coli

<400> 481
tccctttaac taccagggtg ttaacgactt cgacttcgac ttcaaacagt ttctgcacag 60
cagctttgat ttctgctttg gtcgcgtctt tagcaacttt gagtacgatg gtgttggatt 120
tttccatcgc agtagacgct ttttcagaaa cgtgcggtgc acgcagcacc ttcagcagac 180
gttcttca 188

<210> 482
<211> 172
<212> DNA
<213> Escherichia coli

<400> 482
caaaggcgaa caaagcctgt gaagcccgaa ggctccacag acagtgctac ttgaaggcct 60
tactgtttct tcttaggagc gagcaccatg atcatctggc ggccttcgat cttcgttggg 120
aaggattcga ccactgccag ttcttgcaaa tcgtctttca cgcgattaag ca 172

<210> 483
<211> 266
<212> DNA
<213> Escherichia coli

<400> 483
tggagaaaac gggtgattga taaagcaatc atcgttctag gggcgttaat tgcgctgctg 60
gaactgatcc gctttctgct tcagcttctg aactgatagc ggaaacgtaa ttaagggcta 120
agagcacact actcttagcc ctttaacatt taacgcattg tcacgaactc ttctgccgcc 180
gttgggtgaa tggcgacggt attgtcgaag tctttttttgg ttgcccccat cttcagcgcc 240
accgcgaagc cctgcaacat ttcgtc 266

<210> 484
<211> 259
<212> DNA
<213> Escherichia coli

<400> 484
cgcaggcagc tgatggtcaa caggatgaga gaaacccaga gacaggttaa tcacattgcc 60
tttaaccgct gcacggtaac ctacaccaac cagctgcagc ttcttagtga agccttcggt 120
aacaccgata accattgagt tcagcagggc acgcgcggta ccagcctgtg cccaaccgtc 180
tgcgtaacca tcacgcggac cgaaggtcag ggtattatct gcatgtttaa cttcaacagc 240
atcgttgaga gtacgagtc 259

<210> 485
<211> 73

<212> DNA
<213> Escherichia coli

<400> 485
caggtcggaa cttacccgac aaggaatttc gctaccttag gaccgttata gttacggccg 60
ccgtttaccg ggg 73